

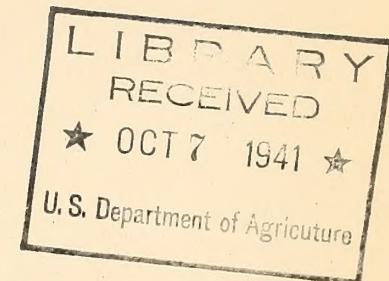
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U.S. DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
COOPERATING WITH NORTH CAROLINA
AGRICULTURAL EXPERIMENT STATION



Improving

LOW INCOMES on TOBACCO FARMS

CASWELL COUNTY
NORTH CAROLINA

by Robert E. Graham Jr.

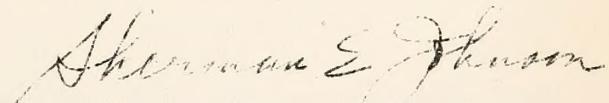
Assistant Agricultural
Economist

WASHINGTON, D. C.
JUNE 1941

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FOREWORD

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S. E. S.
The best place to minimize the evils of low-income farming is on the farm itself. While it is probably true that many low-income farmers are victims of circumstances beyond their control, it is also true that extensive improvements in the living furnished by the farm can be made in most cases. Such improvement cannot be made by shotgun recommendations in terms of averages and broad generalities regarding good practices. It can only be achieved by individual analyses that result in positive suggestions and assistance, couched in terms that the farmer can understand and representing a program that is well within the limits of the adjustment opportunities provided by his resources. The complete rehabilitation of low-income families may be impossible to achieve, simply because of a lack of resources. In such cases, the resources should be supplemented, but the extent of the supplement can often be greatly lessened by skillful reorganization of farming systems. Further, the kind of assistance may vary widely from one group of farms to another.

This attack is being given a practical test on several farms in Caswell County, N. C. An individual analysis has resulted in the formulation of improved farm plans which are being adopted by the farmers involved. Representatives of several agricultural agencies have agreed to use these plans as the basis for their programs on these farms as an "experimental unification" of their efforts to assist these farmers. This report presents a method of analysis and illustrates an approach that is applicable over a much wider area, particularly in view of the adjustments facing flue-cured tobacco and cotton farmers as a result of the curtailment of exports because of the war.



Sherman E. Johnson
Head
Division of Farm Management and Costs

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BETTERING LOW INCOMES ON TOBACCO FARMS
CASWELL COUNTY, NORTH CAROLINA

By Robert E. Graham, Jr., Assistant Agricultural Economist

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INTRODUCTION

Objective

The principal objective of this study is to analyze selected farms in each of the major size groups operating under the different soils, tenure, and market conditions of the county. Strong and weak points of present organizations and farm practices on these farms are pointed out, and plans that will go far toward remedying weaknesses are outlined. Recommendations made by the Caswell County Land Use Planning Committee have been kept in mind in the development of these plans. The findings in this study may become an integral part of the unified agricultural program in the county. The farms studied illustrate adjustment problems faced by the bulk of the farm families operating in each of the major size groups.

Historical Description of Conditions 1/

The farm economy of Caswell County has long been dominated by the production of a single cash crop, flue-cured tobacco. Low incomes of farm families during years of poor tobacco crops and years of low tobacco prices, coupled with the apparent destruction of the soil resources in the county and the curtailment of tobacco exports because of the war, necessitates the development of sound farm organizations and sound farm practices. Fewer and fewer people will be able to make a living from farming in Caswell County, unless farm businesses are developed that will provide an adequate income and will, at the same time, conserve the human and land resources of the county.

Caswell County lies in the Northern Piedmont Plateau, next to the Virginia State line. It is a part of North Carolina Type-of-Farming Area 6, in which the major cash enterprises are tobacco and small grain. In 1860, the financial standing of the county was considered the best in North Carolina. Today Caswell County is the poorest, with respect to valuation of real property, of the 30 counties in the Piedmont Region of the State. Two factors are behind this backsliding. The first is the War between the States, while the second is the tobacco culture. The war, with its freeing of slaves and its general disruption of the economy of the South, caused almost complete disorganization of the agriculture of the county. Many plantations were abandoned for lack of labor and other factors of production.

The combination of landowners lacking adequate capital to hire labor, and a large labor force lacking land to cultivate gave rise to a system of tenancy and consequent exploitation of the soil and human resources. As the tobacco acreage rose, a shift to the lighter types of tobacco was made. This shift led to the cultivation of the sandy and highly erodible land which had previously been considered unfit for tobacco production. Clearing of the steeply rolling, sandy lands greatly accelerated soil erosion. At the same time, exploitation of forest resources increased erosion on these lands, and the various lumbering operations tended to obstruct stream beds, causing the destructive waterlogging of much fertile bottomland.

Retirement of the more productive grain and pasture land, plus an increasing emphasis on tobacco culture, led to a reduction in livestock numbers. This naturally added to the lack of balance between enterprises, and resulted in a decrease in the amount of manure available for soil improvement. Soil depletion continued, steeper slopes were cleared, and, in turn, the problem became more acute. It was during this transition period that the size of farms dropped from an average of 360 acres in 1865 to 85.4 in 1934. The 1939 Agricultural Adjustment Administration worksheets show that 55 percent of all the farms have less than 33 acres of cropland. Intensive systems of farming are necessary to provide for the families on these units.

1/ Much of the history of the county is adapted from the Intensive Report of the Caswell County Land Use Planning Committee, December 1939.

Location of Case Farms

The Caswell County Land Use Planning Committee delineated 27 sub-areas based upon differences in physical features, present land use, and types of farming. ^{2/} These were then grouped into five general areas with similar physical characteristics. Figure 1 shows the location of these five general areas.

Area 1 is generally rolling, becoming more broken as the streams are approached. Soils are especially suited for tobacco and are basically productive, but require careful management. About 20 percent of this area is rough, and the soils are relatively unproductive. The committee has recommended that this portion of the area be retired from farming.

Area 2.- The soils here are predominantly heavy loams and are characterized by poor drainage. Crops are damaged severely in dry periods, and farm work suffers many delays during wet seasons. The soils are suited for tobacco, but lack of drainage limits the variety of crops adapted to this area. About 20 percent of the area is recommended by the land use planning committee for retirement from cultivation because it is rough, eroded, waterlogged, and unproductive.

Area 3.- The land use planning committee recommended that most of this area be retired from farming. The land remaining in farms will require good farming methods to prevent erosion and restore soil fertility.

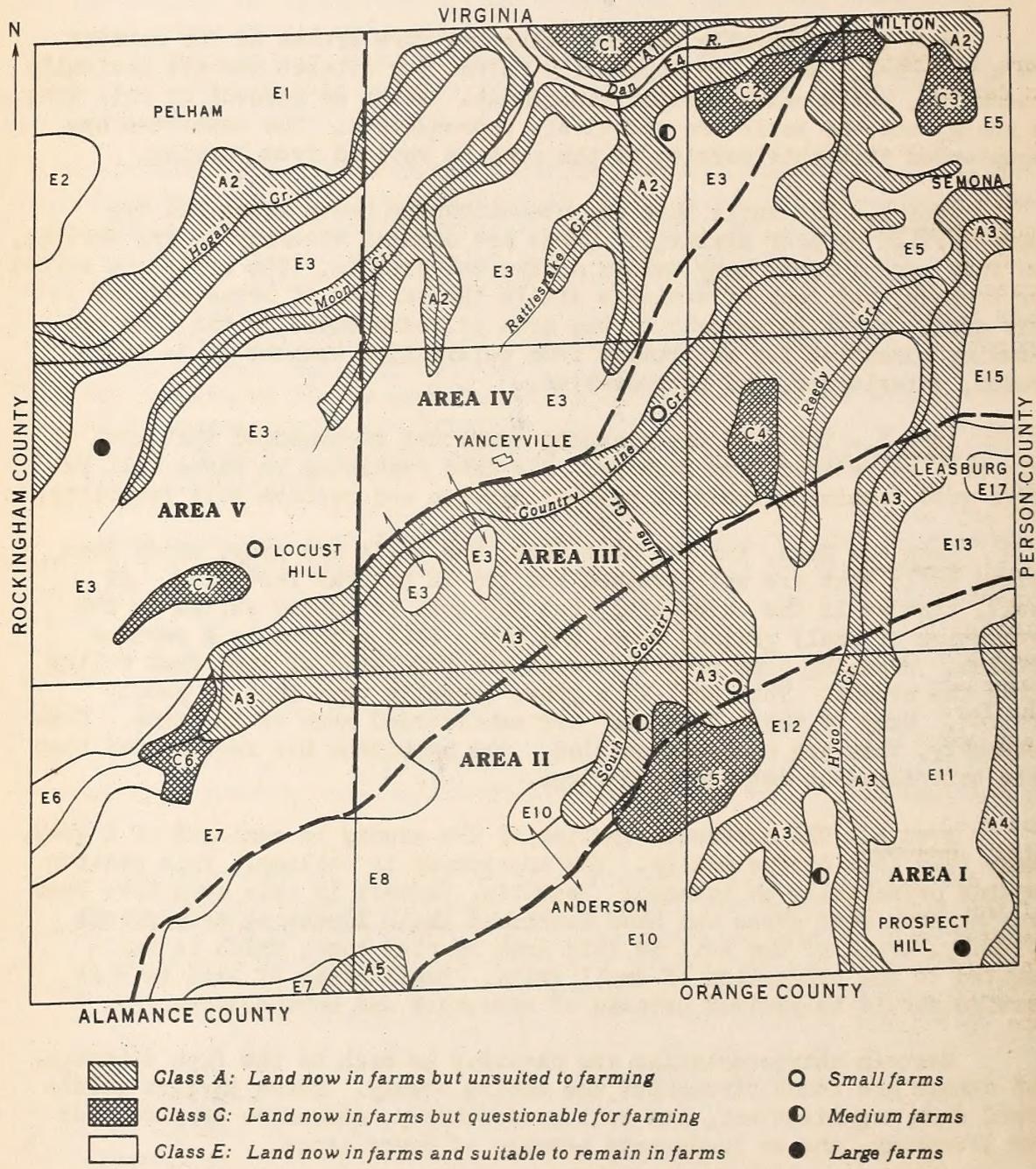
Area 4.- Here, for the most part, the soils are gray, sandy loam, upland soils that are well-drained but low in natural fertility. As usual, tobacco is the chief crop, but the soil is better suited to the production of small grains, corn, and hay. Soil erosion is a serious problem. Reaching down into this area are "fingers" of land that follow along the creeks. This soil is a gray, gravelly type that is poorly drained. Many of these "bottoms" are semiflooded much of the time. Consequently, they are sparsely settled. The committee has recommended that this bottomland be retired from farms.

Area 5.- The northwest section of the county is composed of a gray, sandy loam that erodes easily. The topography is rolling. This section depends principally on tobacco. Recently, farmers in this area have been growing more feed crops and have increased their livestock enterprises slightly. Much of the soil in this area is clay loam, which is well-adapted to the production of small grain. Small areas of land in this section should be retired because of steepness and unproductiveness.

Certain characteristics are peculiar to each of the five subareas, but others are found throughout the entire county. These include unbalanced farm organizations, low soil productivity, excessive erosion, too few livestock, and an inadequate acreage of cover crops.

^{2/} From the Caswell County Intensive Land Use Planning Report, December 1939.

LOCATION OF THE FIVE GENERALIZED AREAS AND THE FARMS ANALYZED, CASWELL COUNTY, NORTH CAROLINA



Major Size Groups

An analysis of AAA data indicated a concentration of farms around 25, 45, and 75 acres of cropland. Case farms have been studied in each of these size groups, which, hereafter, are designated as small, medium, and large farms.

A random sample was drawn from a list containing all farm operators in the county. Because the Bureau was conducting two other studies in Caswell County, the sample drawn was divided at random among the three.

Farm-organization and production-practice data were secured from 26 farms in the sample. These data were supplemented by information on such practices as feeding and seeding, obtained from farm accounts secured in studies of the economics of conservation in Franklin County, N. C. ^{3/} The 26 farms were budgeted and analyzed. By this analysis of present conditions, 14 farms were selected as constituting a group of case farms illustrating problems faced by the various sizes of units operating under the specific conditions in the county.

The 14 farms selected for reorganization were visited by a group consisting of a conservationist from the Soil Conservation service and two or more farm-management specialists. Individual attention was given each field and tract of land. Inquiry was made as to history, yields, and any especial characteristics, such as failure to produce a certain crop or high erodibility. With the aid of a farm map, soils in each field were inventoried and the rotation best adapted to them was outlined. Expected yields were noted and certain practices -- such as terracing, liming, phosphating, correct amounts and kinds of fertilizer, cover crops, meadow strips, and other important factors -- were recommended where necessary. Recommendations were made as to what seemed the best use in the farm business of each tract of land. Practices or treatments necessary were outlined.

During this visit, an attempt was made to analyze the preferences and dislikes of the operator and to evaluate his capabilities. Immediately upon the completion of the visit, those engaged in the reorganization discussed the farm thoroughly and evolved a plan for reorganization of the farm business. All factors mentioned above were carefully considered and the reorganization was made, principally with the following factors in mind: (1) Increase in both cash and noncash income; (2) a soil-conserving system of farming; and (3) the ability and attitude of the operator.

SMALL FARMS

About half the farms in Caswell County may be classed as small farms, having less than 33 acres of cropland. The problems facing this

^{3/} Unpublished data, Studies of Economics of Conservation, North Carolina Experiment Station, and the Soil Conservation Service, U. S. Department of Agriculture.

group are many and varied but there are a few of major importance. Land and funds are severely limited; family labor is abundant; erosion and soil exhaustion are especially serious; managerial ability is usually a limiting factor; the food produced for home use is not sufficient for diet needs, and, if the food were produced, the facilities for keeping it are often lacking. Generally these farms are operated with one mule and have very little machinery.

Farm No. 1

Present organization

Farm No. 1 is located in Area 3. The operator is a colored man who has been on this farm for 20 years, owns his 33-acre farm, and rents whatever additional land he needs from a nearby 53-acre tract. Rent is on the usual one-quarter share basis. Subarea 3 is recommended by the committee as land to be retired from farming. The current return of \$215 to the operator for his labor and management indicates that this recommendation is sound, unless numerous adjustments are made.

Analysis of the Farm

Table 1 presents a brief picture of the farm business. Every acre of land on the farm has been in cultivation at some time in the past. Because of the steep slope and type of soil, practically all of the land is severely eroded, and very little, if any, is well-adapted to the production of row crops. Perhaps a good indication of its condition is that, in the development of a reorganized plan, it was considered inadvisable to produce any corn on the land owned by the operator. This scarcity of tillable land necessitates the renting in of tobacco and corn.

Several additional defects in this farm business should be mentioned:

(1) The lack of balance, both within the cropping system and between the crop and livestock enterprise. This is apparent from the fact that all of the cash income is derived from the sale of tobacco, with the exception of \$8 from the sale of eggs and \$36 from AAA payments.

(2) The lack of adequate production of food and feed for use in the home and on the farm. At present the total production of feed consists of 1 ton of hay, less than 1 ton of fodder, 12 bushels of oats, and 115 bushels of corn. It is evident that this is inadequate to take care of feed requirements, and, therefore, additional feed is bought. This purchase of feed lowers the income from the farm. This scarcity of feed is a direct cause of the lack of livestock products; and in view of this it seems probable that the 500 gallons of milk a year produced by the one cow is an overestimate.

(3) Under the present farming system practically everything is being taken out of the soil and very little is going back. Last year the operator seeded lespedeza, but was unable to get a good stand on the farm. The future, if the present system is continued, holds only a further decrease in yields, an increasing erosion problem, and a general decline in the financial status of the operator.

Table 1.- Present farm business

Crop	Cropping system						Sales Amount: Value	
	Acres		Unit	Production				
	Owned	Rented		Yield	Total			
Tobacco	1.9	1.3	Lb.	700	2,240	2,240	\$448	
Corn: Grain	2.0	5.0	Bu.	20	140	1/ 25	1/ 19	
Fodder			Ton	0.1	0.7	-	-	
Oats: Grain	(1.5)		Bu.	8	12	-	-	
Lespedeza	3.5				Turned under	AAA payments	36	
Clover hay	1.0		Ton	1	1	-	-	
Garden	1.31			-	-			
Idle cropland	6.0							
Total acres in crops 2/	11.2	6.3						
Total cropland	15.7	6.3						
Open pasture	.0	.0						
Woods pasture	10.0							
Other woodland	5.3	-						
Farmstead	2.0	-						
Total	33.0	6.3				Total	\$503	

Animal	Livestock system						Sales Amount: Value	
	Number		Production					
Mules		1		-			-	
Cows (milk)		1		500 gal.			-	
Heifer		1		-			-	
Hogs killed		2		400 lb.			-	
Hens (eggs)		10		100 doz.		50	\$ 8	
Chickens raised		25		-				
						Total	\$ 8	

Financial summary							
(1) Gross cash income		\$511	(4) Noncash expenses				
(2) Cash expenses:			Depreciation			\$ 45	
Crop	\$96		Int. on				
Livestock	24		investment			63	
Other	64		Total				\$108
Total		184					
(3) Net cash income to farm		\$327	(5) Farm return to labor and management (3 - 4)			219	
			(6) Return to landlord above cash expenses, depreciation and investment				\$ 4

1/ Corn sold represents that paid to landlord as rent.

2/ Does not include idle land; includes double-cropping.

Table 2.14 Reorganized system

Part I. Cropping system

Crop	Acres		Unit	Production		Sales	
	Owned	Rented		Yield	Total	Amount	Value
Tobacco	3.2		Lb.	700	2,240	2,240	\$448
Corn	-	5.0	Bu.	30	150	38	1/ 28
Wheat	(5.0)	-	do.	12	60	-	-
Oat hay	1.2	-	Ton		1.5	-	-
Oats	2.0	(5.0)	Bu.	25	175	56	34
Lespedeza seed	5.0	5.0	Lb.	250	2,500	2,100	126
Lespedeza hay	5.0	5.0	Ton	1	10	4	60
Red top	(3.2)	-			Turned		
Garden	2.0	-					
Total acres in crops ^{2/}	26.6	20.0				AAA payments	57
Total cropland use for crops	18.4	15.0					
Open pasture	-	-					
Woods pasture	10.0	-					
Other woodland	2.6	-					
Farmstead	2.0	-					
Total	33.0	15.0				Total	\$753

Livestock system

Animal	:		Production	Sales	
	Number	:		Amount	Value
		:		:	:
Mules	1		-	-	-
Cows (milk)	2		750 gal.	-	-
Calves	2		-	2	\$ 18
Hogs killed	2		450 lb.	100	20
Hens (eggs)	30		240 doz.	90	18
Chickens raised	200		200 hd.	100	35
				Total	\$ 91

Financial summary

(1) Gross cash income	\$844	(4) Noncash expenses	
(2) Cash expenses:		Depreciation	\$45
Crop	\$156	Int. on	
Livestock	15	investment	65
Other	64	Total	\$110
Total	<u>235</u>		
(3) Net cash income	\$609	(5) Farm return to labor and management (3 - 4)	499
		(6) Return to landlord above cash expenses, depreciation, and investment	\$ 19

1/ Landlord's share.

2/ Includes double-cropping.

operator 5 acres of land on which corn may be grown every year, this additional 10 acres could be dispensed with. To maximize his income he should rent the whole 15 acres. The usual gross receipts from the 10 acres would be about \$186, and he has plenty of family labor to take care of it.

The advantages of the new plan are evident when the financial returns of the two systems are compared. Under the new system, the net cash income to the farm is \$609, compared with \$327 under the present system. After deducting other noncash expenses, such as depreciation and investment and return to the landlord, the suggested reorganization offers a cash return to the operator for his labor and management of \$480, which is more than double the \$215 received under the present plan. The gross cash incomes of the proposed and present systems are \$844 and \$511, respectively. It should be noted that the increased returns are due to new enterprises and not to any increase in returns from tobacco, although the opportunity for increased income through larger yields and better quality tobacco should not be overlooked. A further advantage of the new plan is that it provides a much better balance, with income derived from eight different sources rather than from only three.

The reorganized plan provides for more food for home use and an adequate supply of feed for livestock. The results of this are partially reflected in the \$91 income from the sale of livestock products.

Crop Rotations

No regular rotations are practiced under the present system, but the suggested plan has three distinct rotations.

Field & <u>No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 - 3.2 A.	Tobacco (Oats & red top)	Oats Red top	Tobacco (Oats & red top)	Oats Red top
2 - 3.2 A.		Tobacco (Oats & red top)	Oats Red top	Tobacco (Oats & red top)
<u>Wheat & Lespedeza</u>				
3 - 5 A.	Wheat Lesp. seed	Lesp. hay (Wheat)	Wheat Lesp. seed	Lesp. hay
4 - 5 A.	Lesp. hay (Wheat)	Wheat Lesp. seed	Lesp. hay (Wheat)	Wheat Lesp. seed

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Corn, Wheat & Lespedeza</u>				
5 - 5 A.	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay	Corn (Wheat)
6 - 5 A.	Wheat Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed
7 - 5 A.	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay

Making the Change

In developing this plan, no radical changes are necessary. As land is already being rented, the proposal to rent 15 acres of cropland presents no difficulty. The only major obstacle is that caused by the increase in crop expenses from \$96 to \$156. Other expenses remain the same or decrease slightly. This increase in crop expenses can be overcome by obtaining a larger amount of production credit than usual until the plan is able to operate on its own.

Some difficulty may be experienced in getting the landlord to rent the 15 acres of land, with none of it to be used for the production of tobacco. Even with no share of the tobacco sales going to the landlord, his cash return increases from \$4 to \$19.

Harvesting of the lespedeza is taken care of by including in expenses the hiring of the necessary equipment. The feasibility of owning the necessary machinery is discussed elsewhere in this report (page 55).

No open permanent pasture is suggested because of the small size of the business and the necessary capital outlay in building a pasture. However, some of the woods pasture is improved, and as the proposed plan gets into full operation, it is worth while for the operator to consider some pasture work with the idea of perhaps increasing the livestock enterprise and of decreasing the crop enterprises.

Terracing is a valuable asset to any of the cropland, but again the size of the necessary capital outlay causes this recommendation to be left out. This is partly remedied by the fact that on the steepest land no row crops are grown. Terracing should be kept in mind, however, as a future means of improving the farm.

As the general cropland needs lime and phosphate, a yearly application, following Soil Conservation Service recommendations, is included in crop expenses.

No buildings or building improvements are recommended, but this does not mean that the present buildings are adequate. They could easily stand improvement, although no urgent demand for it is found.

Managerial Aspects

The operator of this farm is 42 years of age and appears to be very industrious and anxious to improve his business. His greatest handicap is probably the lack of vision in planning and balancing his farm business. With a little help along these lines, he can very likely effect this re-organization.

Farm No. 2

Present organization

Farm No. 2 is located in Area 5. The operator is a colored man about 45 years of age. Although the land is poor and lack of rotation has damaged the farm considerably, the physical condition of the resources will permit the development of a profitable business.

Analysis of the Farm Business

Table 3 gives a brief description of the more important aspects of the farm business. It shows a gross cash income of \$792, with 69 of this derived from the sale of livestock products, \$3 from AAA payments, and \$720 from tobacco. Cash expenses are \$203, leaving a net cash income of \$589. After deducting other noncash expenses, such as depreciation and interest on investment, the operator has a cash return of \$498 for labor and management.

Defects in the Organization

(1) The reliance on tobacco as almost the sole source of cash income. With only \$69 derived from the sale of livestock products the lack of balance between crop and livestock enterprises is evident, though not so evident as in some farm organizations in this area. Even so it is too great.

(2) The poor use made of the land. With only 27.75 acres of crops on 31.75 acres of cropland, 6 acres of this yield no direct return. No particular rotation or other soil-conserving practices are followed; and, as a result, some erosion has taken place on all of the cropland. In two fields, the erosion is so bad that retirement from cultivation is recommended. A continuation of the present cropping system, as shown in table 3, will cause a further lowering of yields and will make necessary the retiring of more land from cultivation.

(3) An examination of the present livestock enterprise discloses that the numbers of livestock are inadequate and that their production is too low. This is partly due to the low amount of feed produced on the farm. Actually, no hay is produced and only straw and corn fodder serve as roughage. These are supplemented by a little corn.

(4) The lack of adequate food produced for use in the home. The \$69 income from the livestock enterprise loses much of its desirability with the realization that it was attained at the expense of family living from the farm.

Table 3.- Present organization

Crop	Cropping system			Production			Sales	
	Acres	Unit		Yield	Total	Amount	Value	
Tobacco	4.0	Lb.		900	3,600	3,600	\$720	
Corn: Grain	9.5	Bu.		20	190	-	-	
Roughage		Ton		$\frac{1}{4}$	2.4	-	-	
Wheat: Grain	6.5	Bu.		6	39	-	-	
Straw		Ton		$\frac{1}{3}$	2.2	-	-	
Rye	(2.0)			Turned under				
Lespedeza	4.0			Turned under				
Potatoes: Sweet	.5	Bu.		50	25			
Irish	.25	Bu.		60	15	AAA payments	3	
Garden	1.0							
Idle cropland	6.0							
Acres in crops 1/	27.75							
Acres of cropland	31.75							
Open pasture	-							
Woods pasture	5.0							
Other woodland	25.25							
Farmstead	2.0							
Total farm land	64.0					Total	\$723	

Livestock system

Animal	Livestock system			Production			Sales	
	Number	Unit					Amount	Value
Mules	1	-		-			-	-
Cows (milk)	1	Gal.		365			-	-
Heifer	1	-		-			-	-
Calves	$\frac{1}{2}$	-		Calf born every other year, budget $\frac{1}{2}$ calf every year		$\frac{1}{2}$	\$ 4	
Hogs killed	2	Lb.		450		100	20	
Hens (eggs)	20	Doz.		105		50	10	
Chickens raised	150	Hd.		150		100	35	
						Total	\$ 69	

Financial summary

(1) Gross cash income	\$792	(4) Noncash expenses	
(2) Cash expenses:		Int. on investment	\$46
Crop	\$133	Depreciation	45
Livestock	22	Total	\$ 91
Other	48		
Total	203	(5) Cash return to operator for labor and manage- ment (3 - 4)	\$498
(3) Net cash return to farm	\$589		

1/ Does not include idle land; includes double-cropping.

(5) The extremely poor condition of the buildings should be remedied as soon as possible.

Reorganized plan

Analysis of the Farm Business

Table 4 shows the farm under a reorganized plan. Under the proposed system the gross cash income is \$1,003 instead of \$792. Both cash and noncash expenses increase very little, while the reorganization yields a cash return to the operator for labor and management of \$677, or nearly \$200 more than the farm is yielding at present.

The reorganized plan provides for a much more intensive utilization of the cropland with 43.0 acres of crops being grown on 29.0 acres of cropland. At the same time, rotations are set up which tend to prevent soil erosion and to build up the fertility of the soil. In addition, the cropland considered as too steep or too badly eroded is taken out of cultivation and put into pasture or perennial hays. Every acre of cropland yields a return of some kind every year. The income from crops is derived from four rather than from only two sources.

A better balance between livestock and crop enterprises is achieved, with the former contributing \$130 instead of only \$69. This income from livestock is obtained by increasing the size of the enterprise rather than by depriving the family of needed food in the home.

Another advantage of the proposed plan, and one which should be carefully considered because it is not reflected in the cash returns, is the increased production of food for home use both in such things as wheat, corn, and truck, as well as in livestock and poultry products. The rates of production of livestock are increased very little in most cases and none at all in some; whereas, the farm is now producing insufficient feed for the livestock and, consequently, a rise in production rates is expected. This increased production of feed for use on the farm will eliminate the necessity of buying feed and will also allow adequate feeding of increased numbers of livestock.

The reorganized plan and the expenses shown in table 4 also include the costs of building and maintaining soil fertility by the use of lime and superphosphate, and the costs of maintaining 5 acres of pasture and an acre of meadow strip. The proposed 5 acres of open improved pasture will allow some increase in the livestock enterprise, but the additional land made available for development of a larger pasture will allow greater increases.

Effecting the organization

Changes in Cropping System

Eight acres in the farm are especially suited to the production of tobacco. These should form the two 4-acre fields necessary for the suggested tobacco rotation. One acre of present cropland is to be retired to

Table 4.- Reorganized plan

Crop	Cropping system			Production			Sales	
	Acres	Unit		Yield	Total	Amount	Value	
				:	:	:	:	
Tobacco	4.0	Lb.	900	3,600	3,600		\$720	
Corn	6.0	Bu.	25	150		-	-	
Oats: Grain	(2.0)	do.	25	50		-	-	
Oat hay	(2.0)	Ton	1.75	3.5		-	-	
Wheat: Grain	(6.0)	Bu.	10	60		-	-	
Straw		Ton		2 2/3		-	-	
Red top	4.0			Turned under				
Rye	(4.0)			Turned under				
Lespedeza seed	(6.0)	Lb.	250	1,500	1,250		75	
Lespedeza hay	6.0	Ton	1	6	2		30	
Sericea lespedeza	1.0	do.	1	1		-	-	
Potatoes: Sweet	.75	Bu.	80	60		-	-	
Irish	.25	do.	70	18	AAA payments		48	
Garden	1.0							
Total acres in crops	1/43.0							
Total cropland	29.0							
Open pasture	5.0							
Woods pasture	5.0							
Other woodland	23.0							
Farmstead	2.0							
Total farm	64.0				Total		\$873	

Livestock system

Animal	Livestock system			Production			Sales	
	Number	Unit					Amount	Value
				:	:	:	:	
Mules	1	Hd.		-			-	-
Cows (milk)	2	Gal.		750			-	-
Heifers	3	Hd.		-		1	\$ 45	
Calves	2	do.		-		1	9	
Hogs killed	2	Lb.		450	100		20	
Hens (eggs)	30	Doz.		240	90		18	
Chickens raised	200	Hd.		200	110		38	
					Total		\$130	

Financial summary

(1) Gross cash income	\$1,003	(4) Noncash expenses:	
(2) Cash expenses:		Int. on investment	\$54
Crop	\$150	Depreciation	49
Livestock	22	Total	
Other	51		\$103
Total	223	(5) Cash return to operator	
		for labor and manage-	
(3) Net cash income	\$ 780	ment (3 - 4)	\$677

1/ Includes double-cropping.

lespedeza sericea, as it is badly eroded. The retirement from cultivation of a field of 2 acres, and another of 1 acre, plus the clearing of 2 acres of woodland, will provide the 5 acres of open improved pasture. The above allocation of the cropland leaves 2 acres for truck and vegetables, and 18 acres that are divided into three 6-acre fields for the general rotation.

The following rotations are used:

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 & 3 - 4 A.	Tobacco (Rye)	Tobacco (Oats & red top)	Oats and Red top	Red top
2 - 4 A.	Oats & Red top	Red top	Tobacco (Rye)	Tobacco (Oats & red top)
5 - 2 A.		<u>Garden and Truck Crops</u>		
<u>General</u>				
10 - 6 A.	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay	Corn (Wheat)
11 - 6 A.	Wheat Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed
12 & 15 - 6 A.	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay

Changes in Livestock Enterprise

Increases in the livestock enterprises can be raised on the farm, avoiding capital outlays. As shown in the summary table, the cows are bred each year, and one calf is sold and one kept to be raised. The cattle then consist of two cows, one calf, one yearling heifer, and one 2-year old. This latter is sold at approximately 3 years of age, and the calf is kept to fill her place. It will be advisable to sell one of the milk cows from time to time and keep the 3-year old. This depends on the operator's judgment.

Necessary Capital Outlays

(1) Fencing for 5 acres - 360 rds. @ \$3.95 per roll	\$ 18
(2) Mowing machine and rake (one-half interest)	75
(3) Five acres of pasture	
Seed	\$15
Lime (5 T.)	12
4-10-4 (1 T.)	28
	55
(4) One acre of sericea lespedeza	
400 lb. superphosphate	\$2
30 lb. seed	3
	5
	\$153

Total Capital Outlays

The total capital outlays are only \$153, which is less than the increased cash return to labor and management for 1 year. In other words, even excluding the noncash income, the reorganized plan, after it is in full operation, more than pays for the necessary additional outlay in 1 year.

Steps in Making Outlays

First year. The 2 acres now in cropland are to be fenced, seeded, and limed for a permanent pasture at a cash cost of \$29. At the same time, some of the woodland pasture is cleared and the timber is used for posts, firewood, and tobacco wood. The acre of lespedeza sericea will cost \$5, making the outlay for the first year \$34.

Second year. The mowing machine and rake are to be purchased on shares costing each \$75. One-half of the additional expenditure is to be borrowed. Thus the cost for the second year is \$38.

Third year. The \$38 borrowed in the second year for mower and rake is to be paid, which, together with interest at 5 percent, makes the cost \$40 for the third year. The remainder of the woods is cleared for pasture.

Fourth year. The remaining 3 acres of pasture are established at a cost of \$43.

In following years such things as terracing and building improvements are done as the opportunity arises. The pasture is well situated to make an excellent terrace outlet. The small meadow strip between two of the fields will furnish another outlet.

Managerial Aspects

This operator is interested but lacks initiative and is not in the best of health. A considerable amount of aid in securing credit and guidance in putting the plan into effect will probably be necessary.

Farm No. 3

Present organization

Farm No. 3, located in Area 2, is another of the small farms. The operator is a 22-year-old Negro who rents the farm. Much of the cropland is level, although a part is steep and shows considerable erosion.

Analysis of the Farm

Table 5 gives a brief summary picture of the more important aspects. Gross cash income is \$556 with cash expenses of \$181, leaving a net cash income to the farm of \$375. After noncash expenses of depreciation and interest on investment are deducted, the farm receives a cash return of \$276 for labor and management. Of this, \$20 goes to the landlord for labor and management, leaving only \$256 for the operator's labor and management.

Defects in the Organization

(1) As in most other farms of this size group, a decided lack of balance between enterprises is found, with tobacco contributing almost the entire cash income.

(2) The poor land use practiced. This is a factor in the extremely low crop yields, and, more than any other single factor, is responsible for the poor financial status of the business. An important aspect is the small size of business as measured by acres of crops. With a limited acreage of cropland the situation is made even worse by the utilization of only 18 of the 26.5 acres available.

(3) The lack of food produced for use in the home and the lack of feed for livestock. A glance at table 5 shows how inadequate these are.

This farm illustrates the problem found on many of the small farms of Caswell County and especially those on which the soil is very unproductive. The cropping system is such that it fails to utilize fully the already too small acreage of cropland, and the area that is cropped is handled in such a way as to further lower the yields, which are already very low. Because of the lack of cropland a rotation that will really build up the soil and still produce enough crops to provide food and feed and a cash income to the farm is difficult to devise. The operator is convinced that it is impossible to make a satisfactory living on this farm, and he intends to move to a larger farm or perhaps quit farming altogether at the end of the year. However, this is no solution to the problem, because there are many others on similar units depending upon farms such as this as a means of earning a living.

Table 5.- Present farm business

Crop	Cropping system						Sales Value
	Acres rented in	Unit	Production		Amount		
			Yield	Total			
Tobacco	4.0	Lb.	600	2,400	2,400		\$480
Corn	8.0	Bu.	15	120	1/ 30		24
Oats: Grain	1.0	do.	6	6			-
Wheat	3.0	do.	8	24	1/ 6		6
Clover hay	1.0	Ton	1	1			
Sweetpotatoes	.25	Bu.	80	20			
Irish potatoes	.25	do.	60	15			
Garden	.5						
Idle land	2/ 8.5					AAA payments	18
Total acres in crops	18.0						
Total cropland	26.5						
Open pasture	-						
Woods pasture	-						
Other woodland	171.5						
Farmstead	2.0						
Total	200.0					Total	\$528

Livestock system

Animal	Livestock system						Sales Value
	Number	Unit	Production		Amount		
Mules	1			-		-	-
Cows (milk)	1	Gal.		365		-	-
Calves raised	1	Hd.		1		1	\$ 8
Hogs for pork	7	Lb.		600		4 pigs	20
Hens (eggs)	15	Doz.		105			
Chickens raised	50						
						Total	\$28

Financial summary

(1) Gross cash income	\$556	(4) Noncash expenses:	
		Depreciation	\$45
(2) Cash expenses:		Int. on invst.	54
Crops	\$115	Total	\$ 99
Livestock	10		
Other	56		
Total	181	(5) Farm return to labor and management (3 - 4)	276
(3) Net cash income	\$375	(6) Return to landlord above cash expenses, depreciation and investment	\$ 20

1/ Landlord's share.

2/ Does not include idle land.

Suggested reorganization

Analysis of the Farm Business

Table 6 gives a brief picture of the farm under the proposed plan. Gross cash income is increased from \$556 to \$758. Cash expenses are increased by about \$34. The cash return to the operator for his labor and management is increased from \$256 to \$400. While this is still a low return, it is a great improvement over that obtained under the present system.

The suggested plan removes to a certain extent the defects in the original plan. A better balance is obtained between enterprises, and the sources of income are increased. The food needs of the family are much more adequately met than are the feed requirements of livestock. No open improved pasture is provided because of the cost involved, but the red top provides some grazing, and some woods pasture is also available. When the new system is put into effect, soil fertility will be increased and soil erosion reduced.

Effecting the Change

No capital outlays are suggested because the lack of interest and initiative on the part of the owner would probably prevent the carrying out of any such recommendations.

If this plan is to succeed, it is necessary that it be carried out in full; otherwise, the suggested yields will not be attained. Seed must be sown at rates recommended, and the rotation below must be carried out. To the 18 acres of general cropland, 4,500 pounds of lime and 600 pounds of triple superphosphate must be applied yearly; or, if it is desired to make this application once every several years, it should be done on the basis of the above yearly rate. Failure to do this means failure to attain the cash return and food and feed returns indicated in the revised plan.

Crop Rotations

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 - 4.0 A.	Tobacco (Oats & Red top)	Oats & Red top	Tobacco (Oats & Red top)	Oats & Red top
2 - 4.0 A.	Oats & Red top	Tobacco (Oats & Red top)	Oats & Red top	Tobacco (Oats & Red top)

Table 6.- Reorganized plan

Cropping system							
Crop	Acres	Unit	Production	Sales			
			Yield	Total	Amount	Value	
Tobacco	4.0	Lb.	600	2,400	2,400	\$480	
Corn	6.0	Bu.	25	150	1/ 37	28	
Oats: Grain	4.0	do.	20	80	-	-	
Wheat: Grain	(6.0)	do.	12	72	1/ 15	15	
Straw		Ton	$\frac{1}{2}$	5	-	-	
Lespedeza seed	6.0	Lb.	250	1,500	1,260	77	
Lespedeza hay	6.0	Ton	1	6			
Red top	(4.0)			Turned under			
Garden	1.0				AAA payments	41	
Total acres in crops 2/	37.0						
Total acres cropland	27.0						
Pasture	-						
Woodland	171.0						
Farmstead	2.0						
Total	200.0				Total	\$641	

Livestock system							
Animal	Number	Unit	Production	Sales			
				Amount	Value		
Mule	1	Hd.	-	-	-	-	
Cows (milk)	1	Gal.	365	-	-	-	
Calves born	1	Hd.	1	1	\$ 9		
Hogs killed	2	Lb.	450	200	40		
Hens (eggs)	30	Doz.	240	120	24		
Chickens raised	175	Hd.	175	125	44		
				Total	\$117		

Financial summary

(1) Gross cash income	\$758	(4) Noncash expenses:	
		Depreciation	\$45
(2) Cash expenses:		Int. on invat.	54
Crop	\$147		
Livestock	12	Total	\$ 99
Other	56		
Total	<u>215</u>		
(3) Net cash income to farm	\$543	(5) Cash return to farm for	
		labor and management	444
		(6) Cash return to landlord	
		above cash expenses,	
		interest on investment,	
		and depreciation	\$ 44

1/ Landlord's share.

2/ Includes double-cropping.

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>General</u>				
3 - 6.0 A.	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)
4 - 6.0 A.	Wheat Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed
5 - 6.0 A.	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay
6 - 1.0 A.	Truck crops			

Managerial Ability

The operator is apathetic and is farming out of necessity rather than because of any desire to do so. However, if the plan is "sold" to him, he may succeed in developing it with considerable help and advice.

In summary, it might be said that with only the present amount and condition of cropland, it will continue to be very difficult for the operator to obtain a satisfactory return from this farm.

Summary Analysis of Small Farms

Approximately half the farming units of Caswell County consist of less than 33 acres of cropland per farm. Usually, from 10 to 25 percent of this cropland is idle each year. These farms are generally operated with one mule.

The problems facing families on small farms in Caswell County can be met only by providing for many needs which are coexistent with their low incomes. Low incomes cause some of the needs to become more acute, and, in turn, incomes drop to new low levels if more of the essentials for a good farm business and a satisfactory family living are beyond the capacity of current family earnings to pay the bill. A comprehensive, positive adjustment program which will assist these families in improving their status is necessary. The analysis of small farms has revealed many of their needs:

(1) Obvious diet deficiencies must be corrected by the production, conservation, and utilization of more livestock and vegetable products for food.

(2) Land resources are limited on these farms and must be utilized intensively if the volume of business is to be large enough to support a family.

(3) Family labor is the only resource which is available in abundance. If a system of farming cannot be adopted which will utilize this labor more nearly to capacity, then occupations off the farm should be found for some members of the family group.

(4) Improved cropping practices are needed. Yields on crops, other than tobacco, are very low.

(5) With the threat of continued curtailment of flue-cured tobacco exports, the risk on farms dependent upon this crop as their only source of cash income is increased greatly. Small farmers must have balanced farm businesses if they are to withstand the impacts of the war.

(6) Without exception, parts of all of the small farms studied are badly eroded. If this loss in soil productivity continues, the volume of crop production will sink lower and lower. If these farms are to support a family in the future, the cropping systems must be modified to retard the rate of soil loss.

(7) Money now spent for livestock feed is needed for other things. Hays and grains must be produced in sufficient quantities to carry the stock throughout the year.

(8) Storage space must be built. It will be hopeless to produce quantities of food and feed if they are to be destroyed by weevils, mold, and rats.

Many obstacles must be removed before these needs can be met, and only as they are removed will these small farms contribute more towards an adequate level of living. Limited acreages of rough land prevent some of the farmers from adopting systems which would use the available family labor and managerial ability to the utmost. Some of the situations are hopeless. The best farmer could not feed, clothe, and house six or seven people on a small acreage of some of the land in Caswell County. The test which must be applied in these cases is not an approximation of present incomes, but an approximation of future incomes provided the farming is to be well done.

Capital. - To farm intensively requires comparatively large amounts of capital. The farm family which is just barely making a living cannot accumulate savings. Further, when hard pressed, they may have been slow to meet obligations which can unduly reflect upon their record as a prospective credit risk. It is an impossibility to buy cows, mules, legume seeds, mowing machines, and a grain drill, or to build barns, fences, and cellars, without some cash or credit in addition to that required to make a crop. In addition, the rate of capital turn-over in many of these items is very slow, and the annual return very small. It is hopeless to expect that all of the investments necessary for a successful small farm business will pay for themselves in the immediate future. This will be particularly true during the next 5 years, when the price of construction materials will be affected by defense purchases. Investments on small farms in Caswell County will be no exception. The costs of this capital, however, must necessarily be considered in light of social, as well as economic, costs.

Farm training. - Producing flue-cured tobacco is a highly specialized art, in which the farmers of the "Old Tobacco Belt" excel, but many of the operators of small farms in Caswell County have never inoculated legume seed, pastured a legume without causing bloat, weaned nine pigs, if nine were farrowed, nor bucket-fed a calf when butterfat prices were high. Most of them have the latent ability to do these things, but they will need managerial assistance until they learn how. Many will learn quickly; others will require continued assistance. This need for managerial assistance is not restricted to the difficulties with production. In addition, guidance will be needed in storing and using food products, and in the utilization of byproducts which might otherwise be wasted.

Present tenure arrangements provide no assurance that both the tenant and landlord will receive returns consistent with their contributions towards improving the farm. Long-term leases (with option to buy if the tenant makes many improvements), protecting the interests of both, will be required to remove this obstacle. It must be recognized that the small size of business increases the difficulties in the development of satisfactory leasing arrangements. A farm plan provides a definite basis for cooperation between the landowner and the tenant, and a starting point for the development of an equitable lease.

Before many livestock enterprises, such as dairying, can be added to the farm business, effective arrangements must be made whereby these products can be marketed at low cost. This may require cooperative effort, such as that which recently resulted in the establishment of a new milk route in the county.

Other limits. - In addition to those obstacles discussed above, other limits to specific needs are found. For the most part, these involve technical training or special equipment, which most farmers do not have. For example, Caswell County farmers must have lines run by a technician, if they are to obtain effective soil and water conservation from their terraces. The services of a veterinarian must be available at low cost. Cooperation between neighbors is necessary, in order to continue to use the bottomland which is now subject to more frequent overflow because of improper stream-bed maintenance.

The farm plans proposed in the case analyses of the small farms of Caswell County are an attempt to outline the best possible utilization of their somewhat meager resources. Greatest attention is paid to utilizing the usually ample supply of family labor in such a way as to return a maximum income. Less attention is paid to efficiency in the use of labor, because of the serious limitation of other resources, such as land, capital, and entrepreneurship, and because the cost of family labor is very low, if considered in terms of alternative opportunities for using it.

MEDIUM-SIZED FARMS

Particular problems faced by the medium-sized farms are: the under-utilization of relatively adequate land resources; inefficient use of labor; lack of soil-conserving practices; lack of improved production

practices; failure to utilize the potential feed supply by the addition of livestock; an increased percentage of tenancy with its attendant problems. In general, these farms can secure capital much more easily than can the smaller farms, but the need for production credit is still a problem.

Farm No. 4

Present organization

Farm No. 4 is located in Area 4 and is a medium-sized farm with 37.25 acres of cropland and a total of 112 acres. The operator is a colored man, 47 years of age, who rents this farm from an absentee owner. The physical plant is run down, but shows potentialities.

Analysis of Farm Business

Table 7 gives a brief picture of the business. The financial summary shows a net cash income of \$402; but after deducting noncash expenses of depreciation and interest on investment, the cash return to the farm is \$252. This is divided between the two, the landlord receiving \$58 and the tenant earning \$194 for labor and management.

As in the case of the smaller farms, this farm shows a decided lack of balance, for the sale of tobacco is practically the only cash income.

The food and feed produced for use in the home and on the farm are sadly inadequate, although the lack of livestock products for home use is not quite so great as in many other instances.

Another defect is apparent in the results of the cropping system. Because the operator's family is large, thus providing quite a labor force, the tendency is to grow as much tobacco as possible with little attention to the effects on the soil. No organized rotations are followed, and the land is washing very badly. A severe gully across the middle of the principal tobacco field and an old wagon road running across the farm are rapidly becoming serious erosion problems. A continuation of the present system can only lead to lower yields, more erosion, and a general decline in the income of the farm.

Suggested reorganization plan

Analysis of the Farm Business

Table 8 presents a brief picture of the farm if the reorganized plan is carried out. The gross cash income increases from \$603 to \$999, with less than a proportionate increase in expenses. A net cash return of \$746 accrues to the farm and, after deducting noncash expenses, the cash return to the farm for labor and management is \$590. This is divided between the landlord and operator as a cash return for their labor and management, with the landlord receiving \$58 and the operator \$532. Measured by cash returns alone, the proposed plan offers a return to labor and management of nearly two and one-half times that of the present system.

Table 7.- Present organization

Crop	Cropping system 1/						Sales Value
	Acres	Production				Sales Value	
	rented in	Unit	Yield	Total	Amount		
Tobacco	3.4	Lb.	825	2,805	2,805	\$561	
Corn: Grain	12.0	Bu.	15	180	-	-	
Fodder		Ton	1/3	4	-	-	
Wheat: Grain	2.0	Bu.	15	30	-	-	
Straw		Ton	1/2	1	-	-	
Crimson clover	(2.0)			Turned under			
Crimson clover	1.0	do.	1	1	-	-	
Sweetpotatoes	.5	Bu.	80	40	-	-	
Irish potatoes	.3	do.	70	21	-	-	
Garden	1.25		-	-	- AAA payments	34	
Idle cropland	16.8						
Total acres in crops 2/	22.45						
Total cropland	37.25						
Open pasture	-						
Woods pasture	10.0						
Woodland	61.75						
Farmstead	3.0						
Total farm	112.0				Total	\$3595	

Livestock system

Animal	Sales					
	Number	Unit	Production			
				Amount	Value	
Mules	2		-	-	-	-
Cows (milk)	2	Gal.	1,250	-	-	-
Calves	1	Hd.	-	1	\$ 8	
Hogs killed	2	Lb.	500	-	-	
Hens (eggs)	25	Doz.	240	-	-	
Chickens raised	75	Hd.	75	-	-	
				Total	\$ 8	

Financial summary

(1) Gross cash income	\$603	(4) Noncash expenses:	
		Depreciation	\$79
(2) Cash expenses:		Int. on investment	71
Crop	\$123	Total	\$150
Livestock	13		
Other	65		
Total	201	(5) Cash return to farm for	
		labor and management	252
(3) Net cash income to farm	\$402	(6) Cash return to landlord	
		above cash expenses,	
		depreciation, and int.	
		on investment	\$ 58

1/ Landlord's share kept on farm and market price paid for crops.

2/ Does not include idle land; includes double-cropping.

Table 8.- Reorganized system

Cropping system 1/

Crop	: Acres :		Production		Sales	
	rented	Unit	Yield	Total	Amount	Value
	in					
Tobacco	3.4	Lb.	900	3,060	3,060	\$612
Corn	9.0	Bu.	25	225	-	-
Oats	(7.0)	do.	30	210	23	14
Wheat	(6.0)	do.	15	90	16	16
Straw		Ton	1/3	4	-	-
Rye	(4.0)			Turned under		
Lespedeza seed	9.0	Lb.	275	2,475	2,115	127
Lespedeza hay	9.0	Ton	1	9	-	-
Cowpea hay	4.0	do.	1	4	-	-
Garden	2.0				AAA payments	42
Total acres in crops ^{2/}	53.4					
Total cropland	36.4					
Open pasture	5.0					
Woods pasture	10.0					
Woodland	58.6					
Farmstead	2.0					
Total farmstead	112.0				Total	\$811

Livestock system

Animal	: Number :		Production	Sales	
	Unit			Amount	Value
Mules	2		-	-	-
Cows (milk)	2	Gal.	1,250	-	-
Heifers	3	Hd.	(1 calf & 2 heifers)	1	\$ 65
Calves	1		-	-	-
Sows	1		-	-	-
Hogs killed	2	Lb.	450	-	-
Pigs raised	12		-	10	45
Hens (eggs)	50	Doz.	500	265	53
Chickens raised	200	Hd.	200	50	25
				Total	\$188

Financial summary

(1) Gross cash income	\$999	(4) Other expenses:	
		Depreciation	\$84
(2) Cash expenses:		Int. on investment	72
Crop	\$173		
Livestock	10	Total	—
Other	70		\$156
Total	253		
(3) Net cash return to farm	\$746	(5) Cash return to farm for labor and management	
		(3 - 4)	590
		(6) Cash return to landlord above cash expenses, depreciation, and int. on investment	
			\$ 58

1/ Landlord's share kept on farm.

2/ Includes double-cropping.

In addition to the above advantages, others of a noncash nature may be pointed out. The first is a fuller utilization of the cropland, with 53.4 acres of crops being grown on 36.4 acres of cropland. At the same time, the proposed plan provides for rotations that build up and maintain soil fertility, and for the use of lime and phosphate on the general cropland. With the fuller utilization of cropland comes a larger income from the sale of crops and more farm-produced food for the family. In addition, more than enough feed is produced for livestock. This allows the keeping of more livestock, and increases the gross cash income by \$396; at the same time, providing more livestock products for use in the home. This proposed system provides a more even distribution of labor requirements and a fuller utilization of the available family labor.

Effecting the Change

The following rotations are used after the transition is fully made:

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 & 6 4.0 A.	Tobacco (Oats)	Oats & cowpeas (Rye)	Tobacco (Oats)	Oats & cowpeas (Rye)
2 & 5 4.0 A.	Oats & cowpeas (Rye)	Tobacco (Oats)	Oats & cowpeas (Rye)	Tobacco (Oats)
<u>General</u>				
7 3 A.	Corn (Oats)	Oats & Lesp. seed	Lesp. hay	Corn (Oats)
3 & 4 3 A.	Lesp. hay	Corn (Oats)	Oats & Lesp. seed	Lesp. hay
8 (a) 3 A.	Oats & Lesp. seed	Lesp. hay	Corn (Oats)	Oats & Lesp. seed
9 (a) 6 A.	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)
9 (b) 6 A.	Lesp. hay	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay
9 (c) 6 A.	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat & Lesp. seed
8 (b) 2 A.	Truck crops and temporary winter pasture			

It is suggested that the rotations be adopted slowly and thus at less expense. One acre of lespedeza is sown. The seed is to be harvested and used to sow the other acres. This farmer has a mowing machine, and a pan attachment for harvesting lespedeza seed is the only additional equipment needed. It will be necessary to seed, lime, fertilize, and fence 5 acres for pasture. In addition to this, a hen house will be built.

Gullies are to be sown down in lespedeza and, if necessary, one or two check dams should be put in the larger gully. If possible, the tobacco fields are to be terraced, but the general cropland will be cultivated without terracing, provided a rotation such as the one suggested is used and strip-cropping is practiced.

Cost of Capital Outlays

Following is a list of necessary capital outlays and the sequence in which they should be introduced:

Pan for gathering lespedeza	\$ 5
Hen house (using own labor)	25
Fencing (using own posts and labor)	22
Pasture - 5 acres:	
Seed	\$15
Lime (5 T.)	12
7-10-4 (1 T.)	<u>28</u>
Total	55
Total capital outlays	<u>\$107</u>

The additional capital outlay is more than paid for by the increase in the cash return to operator for 1 year's labor and management. This seems to be a reasonable outlay and in order that it not be too great a burden, it is suggested that the additions be made in the following manner:

First year. Purchase pan attachment for mower and fence in 5 acres of pasture. Total cost - \$27.

Second year. Seed, lime, and fertilizer - one-half of the pasture. Total cost - \$27.

Third year. Finish second half of pasture. Total cost - \$28.

Fourth year. Build hen house. Total cost - \$25.

If the rate of expenditure is considered too rapid, it may be varied to suit the operator's judgment, and the time of completely developing the new system will be varied accordingly.

Managerial Aspects

The operator is interested in improving his farm business and has the ability to put this plan into effect. The greatest problem is one of landlord-tenant relationships, as the operator's immediate answer to any suggested improvements is that the farm owner is not interested in the farm and will spend nothing on improving it. With proper guidance the operator

can and will develop the plan himself. If this is done the operator should have a long-term lease, preferably with a "privilege to purchase" clause.

Farm No. 5

Present organization

Farm No. 5 is located in Area 1. The operator is a white man and owns the farm of 166 acres, of which 53.9 acres are cropland. In addition to the operator and his family, the farm has a cropper. As a whole, the topography is fairly level and, with the exception of the fields recommended for perennial hays, erosion is not a serious problem.

Analysis of the Farm

Table 9 presents a brief picture of the present farm business. The gross cash income of the farm amounts to \$1,693. Cash expenses total \$629, which leaves a net cash income of \$1,064; after the noncash expenses of \$206 are deducted, the return to labor and management is \$858. The value of the cropper labor is \$312, while the return to the operator and his family for labor and management amounts to \$546.

This farmer relies almost entirely upon tobacco as a source of income. In fact, the only other sources of income are AAA payments of \$76 and \$75 received from the sale of livestock and livestock products. Yields are low, and no systematic cropping plan is followed. The present system is not adequate to conserve the soil and improve its fertility. Crops are on only 40 acres of the 53.9 acres of cropland, which indicates that the land could be utilized more fully. The present food and feed crops apparently are not sufficient to meet the needs of the families and livestock now on the farm. The only crops grown by the cropper are tobacco and corn. With only these crops the labor during the year is very poorly distributed. These defects have been considered, and full or partial corrections are introduced by the recommended adjustments in a reorganization of the farming system.

Suggested reorganization

Cropping System

Table 10 shows a picture of the farm business under the proposed plan. As this farm has an AAA allotment of 9 acres for tobacco, it is suggested that 18 acres of the cropland be used for a 2-year rotation of tobacco followed by wheat and red top. The tobacco is to be harvested the first year, followed by wheat and red top. The latter is to furnish summer grazing and is turned under for tobacco the following spring.

A 2-year rotation is used on 20 acres for feed crops. This rotation consists of corn followed by crimson clover, which is plowed under for oats and lespedeza which follow. The lespedeza seed is harvested the following fall. Thus a corn crop is harvested one year, while oats and lespedeza seed are harvested the next, with the crimson clover serving to improve the soil. These two rotations decrease the rate of soil erosion.

Table 9.- Present farm business

Crop	Cropping system			Sales		
	Acres owned : Operator:	Unit : Cropper:	Production : Yield	Total	Amount	Value
Tobacco	5.0	4.0	Lb.	850	7,650	\$1,530
Corn	7.0	6.0	Bu.	15	195	
Oats	2.5	-	do.	8	20	
Wheat	3.0	-	do.	7	21	
Rye	1.0	grazed				
Lespedeza (new)	(3.0)	not harvested				
Lespedeza (old)	3.0	-	Ton	1/3	1	
Crimson clover	2.0	-	do.	2/3	1.3	
Garden	1.0	.5				
					Fert. paid by son-in-law	12
Lespedeza	2.0	grazed			AAA payment	76
Total acres in crops 1/	29.5	10.5				
Idle cropland	16.9	-				
Total cropland	43.4	10.5				
Open pasture	2.0	-				
Woods pasture	2.0	-				
Other woodland	98.6	-				
Farmstead	9.5					
Total	166.0				Total	\$1,618

Animal	Livestock system			Sales		
	Number :	Unit :	Production	Amount	Value	
<u>1. Operator</u>						
Mules	3		-	-	-	
Dairy cows (milk)	2	Gal.	760	1 cow	\$ 62	
Calves raised	1	Hd.	1	1	8	
Fat hogs	4	Lb.	1,400	25	5	
Laying hens (eggs)	50	Doz.	300			
Chickens raised	200	Hd.	200			
				Total	\$ 75	
<u>2. Cropper</u>						
Dairy cow (milk)	1	Gal.	365			
Fat hogs	2	Lb.	700			
Laying hens (eggs)	12	Doz.	70			
Chickens raised	25	Hd.	25			
				Total	0	

Financial summary						
(1) Gross cash income	\$1,693	(4) Noncash expenses:				
		Depreciation	\$79			
(2) Cash expenses:		Int. on investment	127			
Crops	\$227	Total		\$206		
Livestock	40					
Other	362					
Total	629	(5) Farm return to labor & mgt.	\$858			
(3) Net cash income	\$1,064	(6) Value cropper labor	312			
		(7) Return to operator for labor & management				
				\$546		

1/ Includes double-cropping.

Table 10.- Reorganized farm business

Crop	Cropping system			Sales		
	Acres owned Operator: Cropper:	Unit	Production	Total	Amount	Value
Tobacco	5.0	4.0	Lb.	850	7,650	\$1,530
Corn	5.0	5.0	Bu.	30	.300	-
Oats	10.0	-	do.	25	250	83
Wheat	-	9.0	do.	12	108	-
Red top	(9.0)		grazed and plowed under			
Lespedeza	(10.0)		Lb.	200	2,000	1,600
Crimson clover	(10.0)		plowed under			
Sericea lespedeza	12.9	-	Ton	1	12.9	-
Garden	2.0	1.0			AAA payment	101
Total acres in crops 1/	63.9	19.0				
Idle cropland	-	-				
Total cropland	34.9	19.0				
Open pasture	2.0	-				
Woods pasture	2.0	-				
Other woodland	98.6	-				
Farmstead	9.5	-				
Total	166.0				Total	\$1,777

Livestock system

Animal	Number	Unit	Production			Sales	
			1. Operator	2. Cropper	3. Total	Amount	Value
Mules	3						
Dairy cows (milk)	2	Gal.	760		1 cow	\$	62
2-yr. heifer	1						
1-yr. heifer	1						
Calves	2						
Hogs	4	Lb.	800		460		37
Laying hens (eggs)	30	Doz.	240		90		18
Chickens raised	175	Hd.	175		114		40
					Total	\$	157
Dairy cow (milk)	1	Gal.	365				
Calf	1	Hd.	1		1		8
Hogs	2	Lb.	400				
Laying hens (eggs)	30	Doz.	240		110		22
Chickens raised	175	Hd.	175		115		40
					Total		70

Financial summary

(1) Gross cash income	\$2,004	(4) Noncash expenses:	
		Depreciation	\$79
(2) Cash expenses:		Int. on investment	125
Crops	\$322	Total	\$ 204
Livestock	39		
Other	371	(5) Farm return to labor & mgt.	1,068
Total	732	(6) Value cropper labor	364
(3) Net cash income	\$1,272	(7) Return to operator for labor & management	\$ 704

1/ Includes double-cropping.

Sericea lespedeza, a perennial hay crop, is sown on 12.9 acres of the steeper and more severely eroded land.

The garden and truck crops are produced on the remaining 3 acres of cropland. These include both sweet and Irish potatoes.

Livestock System

Better feeding and care of the livestock result in increased production, and larger quantities of livestock products are available for sale. Under the proposed plan, a cow or fresh heifer is available for sale each year (table 10). The increased feed produced also enables the cropper's livestock to furnish about \$70 cash income, in addition to the family requirements.

Effecting the Transition

Following are the suggested crop rotations which allow the discussed organization to be maintained and which also provide for the necessary care of the soil:

Crop Rotations

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 - 9 A.	Tobacco (Wheat) (Red top)	Wheat Red top	Tobacco (Wheat) (Red top)	Wheat Red top
2 - 9 A.	Wheat Red top	Tobacco (Wheat) (Red top)	Wheat Red top	Tobacco (Wheat) (Red top)
<u>General</u>				
3 - 10 A.	Corn (Crimson clover)	Oats (Lespedeza seed)	Corn (Crimson clover)	Oats (Lesp. seed)
4 - 10 A.	Oats (Lespedeza seed)	Corn (Crimson clover)	Oats (Lesp. seed)	Corn (Crimson clover)
5 - 12.9 A.	Sericea lespedeza			
6 - 3 A.	Garden and truck crops			
7 - 2 A.	Permanent pasture			

In this system lespedeza and red top are allowed to grow on the same land for only 1 year, but with no more land available this appears to be a

practical rotation. The truck crops include sweetpotatoes for home use and hog feed.

Included in the budget are expenses for 2,580 pounds of superphosphate on the 12.9 acres of sericea lespedeza; 660 pounds of triple superphosphate, and 5,000 pounds of lime per year on the 20 acres of general cropland.

Comparison of Systems

The reorganized plan results in an increased cash income, although the major advantages of the system are the increased production of food and feed products, and the conservation and improvement of the soil resources. The gross cash income increases from \$1,693 to \$2,004. Cash expenses are increased from \$629 to \$732, but this is more than cared for as net cash income increases from \$1,064 to \$1,272. Total farm return to labor and management amounts to \$1,068 under the reorganized plan, compared with the \$858 of the present system. Furthermore, the reorganized plan results in \$364 as the value of cropper labor and \$704 return to the operator's family for labor and management; whereas, the value of cropper labor is \$312 and the return to the operator and his family is only \$546 under the present plan.

The reorganized cropping system, which includes small grain for food and feed, lespedeza for hay and seed, red top for grazing and turning under, and crimson clover for plowing under, makes more feed available for consumption, furnishes additional sources of cash income, reduces the rate of erosion, and increases the fertility of the soil. These, in turn, will increase yields and will bring about a more intensive utilization of the land and labor resources.

The increase in feed supply increases the rate of production of livestock and livestock products, so that larger quantities are used.

From this systematic plan the farm operator is able to make necessary adjustments to meet changes in normal conditions. In addition to increasing the current income, the proposed plan brings about an increase in the future productivity of the farm rather than in the present destruction of soil resources.

Capital Outlays

To put the suggested plan into effect the following capital outlays are necessary:

(1) Sericea lespedeza - 12.9 acres		
Superphosphate (5,160 lb.)	\$31	
Seed (387 lb.)	39	
Total		\$ 70
(2) Mowing machine & rake (pan attachment)		150
Total		\$220

As this sum is not excessively large, no recommendation is made as to the sequence of the outlays. The operator should consider his own cash or credit resources and act accordingly, keeping in mind the possibility of purchasing the mower and rake on shares.

Managerial Aspects

The operator of this farm is definitely conservative and will be very suspicious of any plan, the practicability of which is not definitely proved. He is decidedly interested in improving his farm and is entirely capable of carrying out any reasonable plan with little or no help. One possible hindrance is his concern that any plan has implications of tax increases or government control, in addition to its improvement features.

Farm No. 6

Present organization

Farm No. 6 is located in Area 2. The operator is a white man about 50 years of age who owns 125 acres of land, with 57 acres of this in open cropland. This farm lies in a section of rolling land that is characterized by excellent small-grain production. However, the land is rather rough, and considerable erosion has taken place.

Analysis of the Farm

Table 11 presents a brief picture of the business. As shown by table 11, the total cash income is \$1,070, the net cash income is \$628, and the cash expenses are \$442. After noncash expenses of \$190 have been deducted, a cash return of \$438 is available to the operator for his labor and management.

Defects apparent are:

(1) Practically the entire cash income is derived from the sale of tobacco. This makes the farm dependent upon a crop which at present seems to offer no stable source of income.

(2) The inadequate production of food and feed for use in the house and on the farm. The quantity of feed produced on the farm for the livestock is much more adequate than usual, but even so is not sufficient to meet the standard feeding requirements. The quantity of food produced for use in the home is also somewhat larger than usual, but is nevertheless inadequate.

(3) An absence of systematic rotations. The fields in the center of the farm have been used year after year for inter-tilled crops. As a result they are badly eroded and the soil is depleted. The extent of erosion is such that it is recommended that 15 acres of cropland be put into perennial hay and permanent pasture. In spite of the degree of erosion, the land has not been fully utilized. Only 40 acres of crops are grown on 57 acres of cropland with 23 acres of this lying idle. At present

Table 11.- Present organization

Crop	Cropping system				Sales	
	Acres	Unit	Production	Total	Amount	Value
			Yield			
Tobacco	5.0	Lb.	950	4,750	4,750	\$ 950
Corn	15.0	Bu.	20	300		
Rye	(6.0)			Turned under		
Meadow hay	1.0	Ton	1	1		
Lespedeza hay	9.5	do.	1 (cut 5 A.)	5		
Soybeans	1.0	do.	'1	1		
Sweetpotatoes	.5	Bu.	150	75	50	38
Garden	2.0					
Idle cropland	23.0				AAA payments	67
Total acres in crops ¹	40.0					
Acres of cropland	57.0					
Open pasture	1.0					
Woods pasture	65.0					
Other woodland	-					
Farmstead	2.0					
Total farm	125.0				Total	\$1,055

Livestock system

Animal	Livestock system				Sales	
	Number	Unit	Production	Total	Amount	Value
Mules	3		-	-	-	-
Cows (milk)	2	Gal.	730	-	-	-
Heifers	1		-	-	-	-
Hogs killed	2	Lb.	500	-	-	-
Hens (eggs)	30	Doz.	180	75	15	
Chickens raised	115	Hd.	-	-	-	
				Total		15

Financial summary

(1) Gross cash summary	\$1,070	(4) Noncash expenses:	
		Depreciation	\$ 79
(2) Cash expenses:		Int. on investment	<u>111</u>
Crop	\$172	Total	\$190
Livestock	39		
Other	231		
Total	<u>442</u>		
		(5) Cash return to operator	
		for labor & mgt. (3 - 4)	\$438
(3) Net cash income to farm	\$ 628		

^{1/} Does not include idle land; includes double-cropping.

about the only measure being taken to solve the erosion problem is the building of check dams in the streams and the attempt to catch and hold the soil in the creek bed instead of keeping it on the cropland. However, this measure, inadequate as it is, at least indicates a recognition of the problem on the part of the operator.

Suggested reorganization

Cropping System

These defects lead to a discussion of the results of continuing the present system. While the farm has been providing a living for the operator for many years, it is evident that the trend is definitely downward.

Table 12 shows the farm business under the proposed plan. As this farm has a 5-acre tobacco allotment, 10 acres of the best tobacco land are used for a 2-year rotation of tobacco, oats, and red top. When this rotation is followed, the necessity for "resting" or leaving some of the land idle is eliminated. The land is then producing three crops every 2 years, still the soil is protected and the fertility increased.

Two more acres are selected to provide for the necessary garden and truck patches, which make the reorganization even more attractive, although this does not show up in the financial analysis.

Thirty acres are then placed in a 3-year rotation of corn, wheat, and lespedeza for hay. Two of the fields are long and sloping, and on these strip-cropping will be effective.

Five acres of steep, thin, and eroded land, adjacent to the present 1-acre pasture, are added, providing a 6-acre improved permanent pasture. This leaves 10 acres of land, the best use of which seems to be the production of perennial hay; therefore, it is recommended that this eroded land be put into sericea lespedeza.

Livestock System

With a reduced tobacco acreage it is suggested that one of the three mules be sold. The income from this would provide means for carrying out certain recommended changes.

The 6-acre pasture, together with the feed produced under the new system, will allow keeping two cows, two heifers, and a calf. One 2-year-old heifer or cow may be sold each year and one calf may be kept to replace it. The other calf may be sold as veal.

Table 12 shows the other livestock enterprises and their production.

Comparison of Systems

The suggested reorganization results in a considerable change in the income of the farm. The gross cash income is increased from \$1,070

Table 12.- Reorganized plan

Crop	Cropping system						Sales	
	Acres	Unit	Production		Sales			
			Yield	Total	Amount	Value		
Tobacco	5.0	Lb.	950	4,750	4,750	\$ 950		
Corn	10.0	Bu.	30	300	-	-		
Oat hay	2.0	Ton	2	4	-	-		
Oats grain	3.0	Bu.	25	75	-	-		
Wheat	(10.0)	do.	15	150	75	75		
Straw		Ton	2/5	6	-	-		
Wheat bran				300	-	-		
Red top	(5.0)		Turned under					
Lespedeza seed	10.0	Lb.	250	2,500	2,100	126		
Lespedeza hay	10.0	Ton	1	10	10	150		
Lespedeza sericea	10.0	do.	1	10	-	-		
Garden	2.0				AAA payments		68	
Total acres in crops	67.0							
Total acres cropland	52.0							
Open pasture	6.0							
Woods pasture	65.0							
Farmstead	2.0							
Total farm land	125.0				Total	\$1,369		

Animal	Livestock system						Sales	
	Number	Unit	Production		Sales			
			Amount	Value				
Mules	2		-	-	-	-		
Cows (milk)	2	Gal.	750	-	-	-		
Heifers	3	Hd.	-	-	1	\$ 45		
Calves	2	Hd.	-	-	1	9		
Hogs killed	3	Lb.	800	250	250	50		
Hens (eggs)	30	Doz.	240	90	90	18		
Chickens	200	Hd.	200	110	110	28		
					Total	\$ 150		

Financial summary								
(1) Gross cash income		\$1,519	(4) Noncash expenses:					
			Depreciation				\$ 84	
(2) Cash expenses:			Int. on invst.				115	
Crop	\$ 219		Total					\$ 119
Livestock	28							
Other	188							
Total	435							
(3) Net cash income to farm	\$1,084		(5) Cash return to operator					
			for labor and management (3 - 4)					\$ 885

1/ Includes double-cropping.

to \$1,519, the cash expenses decreased slightly, resulting in a net cash income of \$1,084 in contrast to \$628 under the present system. After deducting noncash expenses, the cash return to the operator for labor and management increased from \$438 to \$885, which is more than a 100-percent increase.

Even these advantages, great as they are, do not tell the entire story. The proposed system shows 67 acres of crops being grown on 52 acres of cropland. Along with this much more intensive utilization of the land, a rotation is provided that tends to prevent erosion and increase soil fertility. Instead of allowing some land resources to remain idle and wash away, the new cropping system is so planned that every acre of land yields a return from one or more crops every year.

As the family labor force is insufficient to care for the crops under the present system, a considerable amount of labor is hired. The proposed plan reduces the peak labor load, thereby decreasing the need for much of this labor; nevertheless, \$100 for hired labor is provided.

The farm organization in the proposed plan is balanced. The production of food for home use is increased, and 10 different enterprises yield a cash return.

In summary, it is felt that this farm and other farms in Caswell County of its type and resources offer definite possibilities for adequate cash and noncash returns, if carefully planned organizations are introduced.

Effecting the Transition

Following are the suggested crop rotations:

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 - 5 A.	Tobacco (Oats & red top)	Oats & Red top	Tobacco (Oats & red top)	Oats & Red top
2 - 5 A.	Oats & Red top	Tobacco (Oats & red top)	Oats & Red top	Tobacco (Oats & red top)
<u>General</u>				
3 - 10 A.	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)
4 - 10 A.	Lesp. hay	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay
5 - 10 A.	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat & Lesp. seed

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
6 - 10 A.	Sericea lespedeza			
7 - 6 A.	Permanent pasture			
8 - 2 A.	Garden & truck crops			

To permit these rotations, the budget expenses provide for 1,200 pounds of superphosphate and 1,200 pounds of lime per year on the 6 acres of pasture, 1,000 pounds of triple superphosphate, and 7,500 pounds of lime per year on the 30 acres of general cropland, and 2,000 pounds of triple superphosphate per year on the 10 acres of sericea lespedeza. If the operator so desires, these applications can be made once every 3 or 4 years or on a certain number of acres each year. If this is done, however, the amount of the applications should be based on approximately the above yearly rates.

Capital Outlays

The following capital outlays are necessary:

(1) Fence for 5 acres of pasture - 360 rds. @ \$3.95 per roll (1 acre is already fenced)	\$ 18
(2) Mowing machine & rake with pan attachment	150
(3) Six acres of pasture	
Seed	\$18
Lime (6 tons)	14
4-10-4 (2,400 lb.)	<u>33</u>
	65
(4) Ten acres of sericea lespedeza	
Superphosphate (2 tons)	\$24
300 lb. seed	30
Total	<u>54</u>
	\$287

Total Capital Outlays

The \$287 required for the capital outlays is only slightly more than half the increased net cash income for 1 year. The listing of only the above items does not mean that no further improvements should be made. There is need for a new barn, a chicken house, and several other buildings. Not previously mentioned is the need for terraces. This has been partly met by putting the fields on which the erosion problem was most acute into pasture or sericea lespedeza.

Steps in Making Outlays

First year.- Sell the extra mule for \$150 and buy mowing machine and rake with this money.

Second year.- Put in 5 acres of lespedeza sericea for \$27 and 5 acres of pasture fence for \$18. Total outlay, \$45.

Third year.- Seed 4 acres of pasture. Total outlay, \$43.

Fourth year.- Finish 2 acres of pasture, \$22. Seed remaining 5 acres of lespedeza sericea for cost of \$27. Total cost, \$49.

Managerial Aspects

The operator of this farm is capable of developing this plan. Before he starts he will definitely have to be shown that it is workable.

Summary Analysis of Medium-Sized Farms

The medium-sized farms, or those with 33 to 64.9 acres of cropland, comprise almost a third of all farms in Caswell County. The labor on these farms is usually supplied by the operator, members of his family, and, in some instances, one cropper and his family. On this group of farms tobacco is practically the sole source of income. Corn for grain and lespedeza for hay provide inadequate quantities of feed for inadequate numbers of livestock, which, in turn, provide inadequate products for home use, and practically none for sale.

Defects in farm organizations and practices are interwoven with both the causes and effects of low incomes on medium-sized farms. From this analysis, the following are the apparent needs of this group of farms:

(1) Land resources on these farms need to be utilized more fully. Compared to the small-sized group, the medium-sized farmers have a more adequate land base, but it is underutilized.

(2) The family labor supply — including cropper labor — is ample, but inefficiently utilized.

(3) A successful organization of medium-sized Caswell County farms must be based upon soil-building and soil-conserving crop rotations, which will supply additional amounts of home-grown feed. The lack of balance between enterprises on farms in this group is more apparent than on other farms. With the current outlook for flue-cured tobacco, this is particularly important.

(4) If a supply of feed, such as in the reorganized plan for farm No. 6, is grown, then small dairy or beef-cattle enterprises can be advantageously added to the farm business. This will mean more livestock products for both home use and sale at a lower cash cost per unit.

(5) Gardens on these farms are inadequate.

(6) As in the case of the small farms, crop yields and livestock production rates are low. If this is to be remedied, crop and livestock practices must be improved.

(7) Nearly all the farms of this size are deficient in storage space to take care of both food and feed products not consumed within a few weeks after harvest.

(8) Most of the farm families have no accumulated earnings to carry them through a crop or to make improvements which require cash outlays.

(9) Many of the medium-sized farm operators are tenants. It will be essential to have equitable long-term leasing arrangements.

(10) Most of the operators of medium-sized Caswell County farms are expert tobacco growers, but few of them have had experience with small grains, legumes, and commercial livestock enterprises. This is one of the chief reasons why need No. 6 is so important. Caswell County farmers are grandsons of stock raisers, but they must regain the art if they are to successfully increase their incomes by adding small livestock enterprises to their businesses.

Needs 1 and 2 indicate the desirability of the available land and family labor resources being used more effectively. Need 3 emphasizes the necessity for soil-conserving, soil-building, and feed-producing rotations. These three needs could be met on most farms in this group by a well-balanced farm plan.

The farm plan provides a basis for approximating the kind and amounts of feed which would be available for planning the livestock on the farm, meeting need No. 4.

Garden plans. - Guided by the food-production recommendation of home economists, garden plans could be formulated rather easily. The above gives a foundation for outlining the storage space (need 7) to determine the capital outlays (need 8) which would be necessary. The farm plan provides a starting point for the development of equitable leasing arrangements, and the framework for cooperation between the farmer and governmental agencies supplying credit and managerial assistance necessary to meet need 9 and closely related need 6.

The problem of securing machinery for cultivating and harvesting these crops is not as great as that on the smaller farms. Then, too, ample land is available to allow such crops as lespedeza and red top to remain on the same land for 2 successive years. In general, it is possible to make the suggested changes more readily and more easily on these farms than on those where less cropland is available.

LARGE FARMS

The large farms of Caswell County differ from the two smaller groups in two major respects. They have more adequate land resources, and their operators usually possess more managerial ability. These two factors make it easier for these operators to secure needed capital. In spite of their relatively favorable position, there are certain problems characteristic of these large farms. These include: Failure to make the relatively good conservation practices pay for themselves by adding livestock to utilize the feed produced; failure to provide an opportunity for the croppers to utilize fully their own labor which is practically their only resource; and a lack of market outlets and professional services that would enable the operators of these farms to take advantage of their available resources.

Farm No. 7

Present organization

Farm No. 7 is located in Area 5. The operator is a colored share renter. The owner has retired, but lives on the farm and supervises the operations. This farm has 245 acres, of which 67 acres are in cropland. The topography is level to gently rolling, with a few acres of rough and eroded cropland. In general, the soil fertility on this farm is being maintained, and there is comparatively little erosion.

Analysis of the Farm

Table 13 presents a brief picture of the business. The present gross cash income is \$1,500, cash expenses are \$462, and the net cash income is \$1,038. A further deduction of noncash expenses leaves a cash farm return to labor and management of \$636. This is divided between the operator and landlord as a cash return to labor and management, with a loss to the landlord of \$145 and a cash return to the operator of \$781. The landlord's loss is not an out-of-pocket cash loss. The return on his investment is simply less than 3 percent.

Defects found on this farm include:

(1) Almost sole reliance on tobacco as a source of cash income. This farm business has even a greater lack of balance than the other farms studied. The only income, other than tobacco sales, is \$4 from the sale of a calf, every other year, and \$48 AAA payments.

(2) The lack of food and feed produced for home and livestock use. This is not so serious as it appears, for the operator cuts hay on shares with a neighbor and by this method obtains about 5 or 6 tons of roughage; however, the farm could easily supply this need. In the matter of food for the home there is little, if any, shortage. Of course, this aspect could be improved, especially in the amount of milk produced.

(3) Inadequate use of the available land and labor. In this respect the farm again differs from the average. Soil-building rotations are

Table 13.- Present farm business

Crop	Cropping system						Sales	
	Acres :		Unit :	Production		Amount :		
	rented	in :		Yield	Total			
Tobacco	8.0	Lb.	850	6,800	6,800	1/	\$1,360	
Corn	11.0	Bu.	25	275	1/	69	52	
Fodder		Ton	1/10	1.1	1/	1/4	1	
Wheat	10.0	Bu.	15	150	1/	35	35	
Lespedeza 1st yr.	20.0			Not harvested				
Lespedeza 2nd yr.	10.0			Not harvested				
Lespedeza 2nd yr.	(10.0)			Plowed under				
Garden	2.0					AAA payments	48	
Total acres in crops	71.0							
Idle cropland	6.0							
Total cropland	67.0							
Open pasture	-							
Woods pasture	75.0							
Other woodland	83.0							
Farmstead	20.0							
Total	245.0					Total	\$1,496	

Livestock system

Animal	Number		Unit	Production	Sales	
	Number	Unit			Amount	Value
Mules	2			-	-	-
Dairy cows (milk)	1	Gal.	450	-	-	-
Calves	½	Hd.	½	-	½	\$ 4
Fat hogs	2	Lb.	800	-	-	-
Laying hens (eggs)	25	Doz.	150	-	-	-
Chickens raised	150	Hd.	150	-	-	-
					Total	\$ 4

Financial summary

(1) Gross cash income	\$1,500	(4) Noncash expenses:	
		Depreciation	\$ 88
(2) Cash expenses:		Int. on invst.	314
Crops	\$229		
Livestock	14	Total	\$ 402
Other	219		
Total	462		
(3) Net cash income	\$1,038	(5) Cash farm return to	
		labor & management	636
		(6) Cash return to landlord	
		above cash expenses,	
		depreciation, and	
		investment	\$ -145

1/ Landlord's share.

2/ Includes double-cropping.

followed and the soil fertility is being improved. One of the tobacco fields is an exception, however, for the crop is produced on steep land that is eroded rather severely. In the present cropping system are 61 acres of crops on 67 acres of cropland, leaving 6 acres idle. The defect in the present land use is found in the returns obtained from the present system. From a purely soil-conservation viewpoint, it is undoubtedly an excellent system; but, from a farm-management point of view, too much of the land is yielding no direct return. The most striking example lies in the 40 acres of lespedeza. This crop remains on the land for 2 years and is then plowed under. While the soil undoubtedly benefits greatly, this is a rather expensive method of maintaining its fertility.

The same criticism might well be made of the livestock system and its failure to utilize fully the potential resources of the farm. The available cropland and the potential pasture and hay resources would allow expanding the livestock enterprises to provide a considerable source of income.

In spite of the above criticism, it is well to stress again that the present policy of employing extensive soil-conserving practices is highly commendable and from a soil conservation viewpoint is very desirable. That this is a very expensive method of maintaining soil fertility should also be pointed out again. The land should yield a larger cash return, either directly or indirectly.

Suggested reorganization

Cropping System

Table 14 shows a picture of the farm business under the proposed plan. Nineteen acres are used for a 2-year rotation of tobacco, oats, and red top. The yield of tobacco is increased from 850 to 900 pounds by retiring a 6-acre field which is rather severely eroded, and by following this rotation. This rotation also tends to remedy what appears to be a weakness in the present system; that is, it allows a crop of tobacco and one of oats to be taken from the field every 2 years and, at the same time, a crop of red top to be turned under. The 6-acre tobacco field, which is taken out of row-crop cultivation, is put into sericea lespedeza, which prevents erosion and, at the same time, yields a yearly crop of hay. Two more acres are selected for garden and truck patches and a well-rounded garden is provided. The remaining 40 acres (two 13-acre fields and one 14-acre field) of cropland are then cropped by a 3-year corn, wheat, and lespedeza rotation.

It is felt that this cropping system is sound, both from an economic and a soil-conserving point of view. It obtains a fuller utilization of the available cropland and labor, and, at the same time, increases the fertility of the soil.

Livestock System

Table 14 shows the changes made in the livestock system. The number of livestock has been increased and slightly higher rates of production are anticipated. Some surplus products are sold.

Table 14.- Reorganized plan

Crop	Cropping system						Sales
	Acres	Production				Sales	
	rented	Unit	Yield	Total	Amount		
	in						
Tobacco	9.5	Lb.	900	8,550	8,550	\$1,710	
Corn	13.0	Bu.	40	520	1/ 213	160	
Oats	9.5	do.	35	332	1/ 221	133	
Wheat	13.0	do.	20	260	1/ 183	183	
Red top	(9.5)			Grazed and plowed under			
Lespedeza seed	(13.0)	Lb.	300	3,900	3,340	200	
Lespedeza hay	14.0	Ton	1	14	10	150	
Sericea lespedeza	6.0	do.	1	6	-	-	
Sweetpotatoes	1.0	Bu.	60	60	-	-	
Garden	1.0						
Total acres in crops ^{2/}	89.5				AAA payments	91	
Idle cropland	-						
Total cropland	67.0						
Open pasture	-						
Woods pasture	75.0						
Other woodland	83.0						
Farmstead	20.0						
Total	245.0				Total	\$2,627	

Livestock system					
Animal	Number	Unit	Production	Sales	
				Amount	Value
Mules	2		-	-	-
Dairy cows (milk)	2	Gal.	900	-	-
2-yr. old heifer	1	Hd.	1	1	\$ 40
1-yr. old heifer	1		-	-	-
Calves	2		-	-	-
Brood sow	1		-	-	-
Pigs for pork	6	Lb.	1,200	775	62
Pigs for sale	6	Hd.	6	6	24
Laying hens (eggs)	30	Doz.	240	60	12
Chickens raised	175	Hd.	100	100	35
				Total	\$ 173

Financial summary					
(1) Gross cash income	\$2,800	(4) Noncash expenses:			
(2) Cash expenses:		Depreciation	\$93		
Crops	\$298	Int. on invst.	326		
Livestock	8	Total	\$ 419		
Other	224	(5) Cash farm return to			
Total	<u>530</u>	labor & management	1,851		
(3) Net cash income	\$2,270	(6) Cash return to landlord			
		above cash expenses,			
		depreciation, and			
		investment	\$ 156		

1/ Landlord's share taken off farm.

2/ Includes double-cropping.

Comparison of Systems

A comparison of the present with the suggested system shows a considerable advantage for the proposed system. Gross cash income is increased from \$1,500 to \$2,800, which is almost double that now obtained. The cash expenses are larger, but even so the net cash income is \$2,270, as compared with \$1,038, or about double that received at the present time. Returns to the operator for labor and management total \$1,695 and returns to the landlord total \$156 above cash expenses, depreciation, and investment. This is very striking when compared with the \$781 received for labor and management by the operator under the system now being followed. Another point worth noting is that whereas under the present arrangement the landlord pays only for the seed for the soil-building crops after deducting noncash expenses such as interest on investment and depreciation, the cash return to labor and management is a minus \$145. Under the suggested system, this is a plus \$156.

The increase in cash returns does not tell the entire story. Other advantages include the fuller utilization of available resources with 89.5 acres of crops grown on 67 acres of cropland and with most of this yielding a return in the form of food, feed, or products for sale. With this more intensive cropping system, the soil-conservation aspects are cared for by rotations. While the present system is not noticeably lacking in the production of food and feed for home and livestock use, still the proposed system provides for a production that is entirely adequate and leaves a surplus of some of these food and feed products for sale.

Effecting the Transition

Below is the suggested crop rotation which allows the proposed organization to be maintained.

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>				
1 - 9.5 A.	Tobacco (Oats & red top)	Oats & Red top	Tobacco (Oats & red top)	Oats & Red top
2 - 9.5 A.	Oats & Red top	Tobacco (Oats & red top)	Oats & Red top	Tobacco (Oats & red top)
<u>General</u>				
3 - 13 A.	Corn (Wheat)	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)
4 - 14 A.	Lesp. hay	Corn (Wheat)	Wheat Lesp. seed	Lesp. hay
5 - 13 A.	Wheat & Lesp. seed	Lesp. hay	Corn (Wheat)	Wheat & Lesp. seed

<u>Field & No. Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
6 - 2 A.	Garden and truck crops			
7 - 6 A.	Sericea lespedeza			

The proposed budget of expenses includes the maintenance of the sericea lespedeza by the application of 200 pounds of superphosphate per acre per year. Use of lime and phosphate, however, is at a considerably lower rate than that generally recommended for Caswell County cropland. The amount included in the budget expenses is to be applied at the rate of 33 pounds of triple superphosphate per acre and 250 pounds of lime per acre on the general cropland once every 3 years or one-third of this amount per year. The present condition of the soil is such that this low rate is considered adequate.

Capital Outlays

The following capital outlays are needed to enable the proposed plan to be put into effect. As the cost is small when compared to the increased direct cash return resulting from the adoption of this plan, it is felt that no recommendations need be made as to the steps in making these outlays.

(1) Six acres of sericea lespedeza

Superphosphate (2,400 lb.)	\$14
Seed (180 lb.)	<u>18</u>
	\$ 32

(2) Mowing machine and rake with pan attachment

<u>150</u>	\$182
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Managerial Aspects

The operator of this farm would not attempt to use this or any other new plan, except under direct orders from the landlord. It is, therefore, necessary to consider the latter. He is completely capable of effecting the change and can develop it successfully. His attitude, however, is uncertain. He is definitely interested in good farming, but is reluctant to make many changes.

Farm No. 8

Present organization

Farm No. 8 is located in Area 1. The operator is a white man who owns the farm. In addition to the operator's family, two cropper families are living on the farm. The farm unit consists of 230 acres of land, of which 65.5 are used for crop production. Nearly all the cropland is suitable for tobacco production. Fields are relatively small and scattered,

and the topography is rolling to very steep. Erosion is occurring on several of the steepest fields, but a fairly good cropping system has prevented this from becoming so severe as to make the land unsuitable for production.

Analysis of the Farm

Table 15 presents a brief picture of the farm business. The present organization, under normal conditions, yields a gross cash income of \$1,494 (table 15). A net cash income of \$918 remains after deducting cash expenses for the farm. A return of \$279 goes to the two cropper families. This sum represents the cost of cropper labor to the operator. Deducting this, the operator has \$282 as a cash return to himself and his family.

Tobacco and AAA payments are the only sources of cash income from crops, and \$66 are received from livestock sales. More than 25 percent of the cropland is lying idle, while no small grain is being grown for food for the family and feed that can be utilized by the livestock. The land is not being fully utilized. Although crimson clover and lespedeza are already being used to conserve and build up the fertility of the soil, terraces, border and meadow strips, and a better balanced cropping system would improve this farm organization. Furthermore, the present farm business does not utilize the family labor supply to advantage.

A very pressing problem lies in the low income of the croppers. There are two cropper families on this farm. The total cash income for both families is only \$279 for the year. This is obviously inadequate.

The principal adjustment problems are: (1) Soil erosion; (2) profitable utilization of family labor; (3) more diversified and systematic cropping plan; (4) production of more food and feed for home and farm use to raise the level of living of those on the farm.

Suggested reorganization

Cropping System

The farm business under the proposed plan is shown in table 16. As this farm has an AAA allotment of 8 acres for tobacco, it is suggested that 16 acres of the best tobacco land be put into a 2-year rotation of tobacco, wheat, and red top. This will provide a cash crop each year. The red top is to be grazed and plowed under to increase the organic matter in the soil. For a rotation of corn, small grain, and lespedeza, 26 acres are used. Thirteen acres are left for a rotation of small grain and lespedeza. Severely eroded places, including field borders, are taken out of cultivation and planted in sericea lespedeza. About 5.75 acres are of this class of land. The garden and potato crops for the operator and croppers are grown on the remaining 4.75 acres. In order to increase the productivity of the pasture, 4 additional acres are to be cleared and a total of 6 acres seeded and fertilized.

Table 15.- Present farm business.

Crop	Cropping system						Sales Amount: Value
	Acres Oper- tor	owned Crop- pers	Production Unit: Lb. Bu. Ton	Yield .8	Total		
Tobacco	4.0	4.0	Lb.	850	6,800	6,800	\$1,360
Corn	5.0	17.0	Bu.	24	528	-	-
Lespedeza - 2nd yr.	5.0	-	Ton	.8	4	-	-
Lespedeza - 1st yr.	4.0	-			Not harvested		
Wheat and clover	6.0	-	do.	1	6	-	-
Garden	.5	2.0					
Total acres in crops ^{1/}	24.5	23.0			Total AAA payments		68
Idle cropland	18.0	-					
Total cropland	42.5	23.0					
Open pasture	6.0	-					
Woods pasture	19.0	-					
Farmstead	15.0						
Other woodland	124.5						
Total	230.0					Total	\$1,428

Livestock system

Animal	Sales					
	Number	Unit	Production	Amount	Value	
(1) Operator						
Mules	2					
Cows (milk)	2	Gal.	1,460			
Calves raised	1	Hd.	1	1	\$ 8	
Fat hogs	3	Lb.	1,170			
Laying hens (eggs)	65	Doz.	300	30	6	
Chickens raised	150	Hd.	150	150	52	
				Total	\$ 66	
(2) Cropper						
Pigs	4	Lb.	800			
Laying hens (eggs)	25	Doz.	150			
Chickens raised	150	Hd.	150			

Financial summary

(1) Gross cash income	\$1,494	(4) Noncash expenses:	
(2) Cash expenses:		Depreciation	\$184
Crops	\$244	Int. on invst.	173
Livestock	61	Total	\$ 357
Other	271	(5) Farm return to labor	
Total	576	and management	561
(3) Net cash income	\$ 918	(6) Value cropper labor	279
		(7) Return to operator for	
		labor & management	\$ 282

^{1/} Includes double-cropping; does not include idle cropland.

Table 16.- Reorganized farm business

Crop	Cropping system						Sales	
	Acres owned : Operator	Acres owned : Cropper	Unit	Production : Yield	Total	Amount	Value	
Tobacco	4.0	4.0	Lb.	1,000	8,000	8,000	\$1,600	
Corn	2.5	10.5	Bu.	30	390	-	-	
Oats	2.5	2.5	do.	35	175	31	19	
Wheat	-	16.0	do.	15	240	58	58	
Red top	(8.0)	-			Grazed and plowed under			
Lespedeza hay	(5.0)	(8.0)	Ton	1	13	3	45	
Crimson clover	(13.0)				Plowed under			
Lespedeza seed	13.0		Lb.	300	3,900	3,380	203	
Sweetpotatoes	.75	1.0	Bu.	80	140			
Meadow & border strips	5.75		Ton	1	5.75			
Garden	1.0	2.0				AAA payment	101	
Total acres in crops ^{1/}	55.5	44.0						
Idle cropland	-	-						
Total cropland	29.5	36.0						
Open pasture	10.0							
Woods pasture	15.0							
Other woodland	124.5							
Farmstead	15.0							
Total	230.0					Total	\$2,026	

Livestock system

Animal	Number	Unit	Production			Sales	
			Amount	Value			
(1) Operator	Mules	2					
	Dairy cows (milk)	2	Gal.	1,460	Butter 480#	\$ 106	
	2-yr. heifer	1	Hd.		1	40	
	1-yr. heifer	1					
	Calves raised	2					
	Hogs for pork	4	Lb.	800	460	37	
	Laying hens (eggs)	30	Doz.	240	90	18	
	Chickens raised	175	Hd.	175	115	40	
					Total	\$ 241	
(2) Cropper	Hogs for pork	4	Lb.	800			
	Dairy cows (milk)	2	Gal.	1,080			
	Calves raised	2			2	15	
	Laying hens (eggs)	50	Doz.	400			
	Chickens raised	150	Hd.	150			
					Total	\$ 256	

Financial summary

(1) Gross cash income	\$2,282	(4) Noncash expenses:	
(2) Cash expenses:		Depreciation	\$184
Crops	\$329	Int. on invst.	179 \$ 363
Livestock	65		
Other	271	(5) Farm return to labor	
Total	665	and management	1,254
		(6) Value cropper labor	333
		(7) Return to operator for	
		labor & management	\$ 921
(3) Net cash income	\$1,617		

^{1/} Includes double-cropping.

Livestock System

The proposed livestock system is shown in table 16. Two heifers, one calf, and one hog are added to the present number of livestock. As nearby markets for livestock products are developed, either one or all of the dairy, poultry, or hog enterprises should be expanded, as ample cropland is available for the production of feed and the livestock enterprises.

Comparison of Systems

The suggested system is much more profitable than the present one (table 16). Gross cash income is increased from \$1,494 to \$2,282, and, even though cash expenses increase, the rise is not in proportion to the increase in receipts, as net cash income amounts to \$1,617 for the reorganized plan, while this item is only \$918 under the present plan. Returns to the cropper for labor are greater in this proposed plan, \$333 compared with \$279, while the return to the operator and his family for labor and management increases even more, or from \$282 to \$921.

The production of small grains makes more food and feed available for use on the farm and makes possible the reduction of the acreage of corn, which, in turn, will reduce the rate of erosion. The increase in the acreage of lespedeza, small grains, and soil-building crops not only aids in reducing erosion, in building up the soil, and in increasing the yields, but also reduces the dependence upon tobacco as a chief source of income. This system also presents the opportunity for a higher degree of utilization of the available labor supply.

The proposed livestock system makes it possible to sell one cow each year in addition to butter, pork, and poultry products amounting to \$241, compared with \$66 for the present plan. In addition, buttermilk is made available for poultry and hogs.

A serious problem is left unsolved in spite of the obvious advantages of this reorganization. What can be done with the excess cropper labor? The cash income of the croppers is increased from \$279 to \$333 and their family living from the farm increases even more, but this is still inadequate. With only 4 acres of tobacco to be grown by cropper labor, two families provide excess labor. The slight increase that is achieved through the reorganization results from the production of grains and hays for sale by the croppers, but the returns from these crops are low.

From the standpoint of this individual farm the solution to the problem would be to reduce the number of cropper families from two to one. This would provide no solution from the standpoint of the county or of the cropper family that would be removed.

The cash return to the farm increases from \$561 to \$1,254 under the proposed plan. The cash return to croppers only increases from \$279 to \$333. This disproportionate distribution of the increased returns indicates the need for a more equitable rental agreement in which the

sharecroppers may receive a larger share of the produce. Perhaps other remedies would be to provide off farm employment for this excess labor, or to develop a profitable enterprise that requires a relatively large labor supply.

The suggested crop rotations are as follows:

<u>Field & No.</u>	<u>Acres</u>	<u>1st Yr.</u>	<u>2nd Yr.</u>	<u>3rd Yr.</u>	<u>4th Yr.</u>
<u>Tobacco</u>					
1 - 8 A.		Tobacco (Wheat & red top)	Wheat & Red top	Tobacco (Wheat & red top)	Wheat & Red top
2 - 8 A.		Wheat & Red top	Tobacco (Wheat & red top)	Wheat & Red top	Tobacco
<u>General</u>					
3 - 13 A.		Corn (Crimson clover)	Corn	Wheat 8 - Oats 5 (Lesp. hay)	Lesp. seed
4 - 13 A.		Wheat 8 - Oats 5 (Lesp. hay)	Lesp. seed	Corn (Crimson clover)	Corn
5 - 13 A.		Lesp. seed (Wheat 8 - Oats 5)	Wheat 8 - Oats 5 (Lesp. hay)	Lesp. seed (Wheat 8 - Oats 5)	Wheat 8 - Oats 8 (Lesp. hay)
6 - 5.75 A.		Lespedeza sericea			
7 - 4.75 A.		Garden and truck crops			
8 - 10 A.		Permanent pasture			

Effecting the Transition

Included in the crop expenses for the reorganized plan is the cost of 1,000 pounds of superphosphate and 1,000 pounds of lime per year on 5 acres of pasture, 200 pounds of phosphate and 400 pounds of lime per acre on the border and meadow strips, and a total of 430 pounds of triple superphosphate and 3,250 pounds of lime per year in the general crop rotation.

Crop Outlays

To make the transition from the present to the suggested plan, the following capital outlays are necessary:

(1) Six acres of pasture			
Seed		\$18	
Lime (6 tons)		14	
4-10-4 (2,400 lb.)		33	
			\$ 65
(2) Sericea lespedeza - 5.75 acres			
Superphosphate (2,300 lb.)		\$14	
Seed (175 lb.)		18	
			32
(3) Kudzu - 1/4 acre			
(In old road & on road banks)			
1,250 plants &			
superphosphate (50 lb.)			2
Total capital outlay			\$ 99

The farm business is large enough now to make the total expenditure for capital outlays in 1 year without causing any undue hardship. Terracing is not considered in the cost.

Managerial Aspects

This operator is very much interested in improving the physical plant, as well as in increasing his income. He is capable of executing any reasonable plan presented.

Summary Analysis of Large Farms

About 15 percent of the farms in Caswell County have 65 acres or more of cropland. Generally, these operating units support the operator and one or more sharecropper families. The number of sharecropper families depends almost entirely upon the number of acres of tobacco grown. With the reduction in tobacco acreage and the current system of farming, these farms have a sizable acreage of idle cropland, and, in turn, an excess of cropper labor.

This excess of cropper labor constitutes a problem of paramount importance. For example, farm No. 8 normally employs two cropper families. These two families each produce 4 acres of tobacco, however. Under the reduced allotments the acreage of the croppers has been reduced to 2 acres for each family. The result is a lowered income and much idle labor.

This problem can be resolved through one of two means. Opportunities for outside employment may be made available, or efforts may be focused upon the development of more intensive enterprises that will utilize this excess labor. With the present limited markets the latter course seems to offer little possibility. If the number of cropper families remains the same, a different distribution of receipts and expenses will be necessary to provide the sharecroppers with an adequate income. Present rental agreements, developed for a tobacco economy, are inequitable when used as a basis for the type of farming suggested in these plans.

Compared to the other groups of farms, a higher proportion of the acreage on the large farms is used for small grain and hay crops. These crops, with an expansion in the livestock enterprises, appear to be the most satisfactory alternatives compared to tobacco. They require less labor than tobacco. Further, the nature of the production of grains and livestock makes the usual one-half division of expenses and receipts an unsatisfactory basis for the agreement between landlord and cropper. The present analysis illustrates the return to the landlord and cropper, if the farms were reorganized and the usual renting arrangement followed.

Large farms have ample land and labor; generally, they are in a stronger financial position and have had experience with a wider range of crop and livestock enterprises. The outstanding changes needed in their businesses are all involved in the desirability of their organizing their resources into a more balanced system of farming.

Major adjustments recommended for the larger farms may be summarized as follows:

- (1) Increase production of relatively high-yielding feed crops, making possible the expansion of livestock enterprises.
- (2) Increase acreage of soil-building crops to retard soil loss and increase productivity.
- (3) Purchase harvesting machinery, making possible the realization of a more direct return from small grains and legumes.
- (4) Livestock production rates are low, and an increase in the efficiency of these enterprises would do much to increase incomes.
- (5) Develop lease arrangements between operators and croppers, which will provide equitable returns to both, throughout the improvement program on the farm.

The chief obstacles to these adjustments seem to be a lack of experience on the part of many operators in managing small-grain and livestock enterprises, the lack of production alternatives which will yield an immediate return, and the lack of professional services and market outlets.

If the proposed organizations are adopted by many farmers there will be a considerable need for harvesting the small grains and lespedeza seed. Obviously, all farms cannot afford the necessary machinery for this. As a result, there is an opportunity for some of the more enterprising farmers to add an additional cash enterprise to their present businesses by purchasing combines and doing custom work for other farmers in the county. As these larger farms have more adequate capital resources, it is suggested that attention be directed to this possibility.

As a large number of families are dependent upon the income from tobacco on the large Caswell County farms, the impact of the war upon these farms will be severe. Every effort must be made by the large farm

operators and agricultural agencies to make adjustments which will continue to provide employment for most of the families on these farms. It is to be expected that opportunities for work in industry and to serve in the armed forces will absorb a part of the people whose services will not be needed if more extensive systems of farming are adopted.

FARM WOODLAND AND CROP PROBLEMS

Approximately 70 percent of the land in Caswell County is in farm woodlands; the woodland area per farm varying in size from a few to hundreds of acres. As long as the operator can secure enough wood to cure his tobacco, he thinks little about his woodlands, except for the occasional sale of wood or saw timber. However, a possibility of developing the farm woodland as a supplementary source of income is seen. Much work in the timber can be done at a slack time with little or no interference with other farming operations. Recommendations for improvement of farm woodlands were not included in these plans, for the average farmer is not familiar with improved woodland practices. Intensive woodland management will demand more and more attention from both technicians and farmers. Many problems, such as fire protection, must be approached on a community basis as well as from the viewpoint of the individual farm.

CROPPING SYSTEMS

A wide range of choice as to varieties of a particular crop and in methods of handling such a crop exists. For example, four annual varieties of lespedeza are available for use. Common lespedeza is used largely for pastures and in crop rotations, although it is not as popular as some other varieties. Tennessee 76 is an improved variety of common lespedeza and has been used with good results throughout the entire Piedmont Area. However, it is not so popular as the Kobe. Korean lespedeza is about 6 weeks earlier than either of the other varieties and produces less hay and more seed than either of the other varieties. It has certain advantages when used in a strict grain rotation. Also, it requires considerable lime. Kobe normally produces the largest yields of hay and the smallest yields of seed. It is the latest of the annual varieties. The choice of an individual variety of lespedeza to be used on a farm should be left to the farmer, but the feeling among agricultural leaders in Caswell County is that Kobe should probably be used more than any other variety.

The question has been raised in regard to cutting lespedeza for seed the first year and for hay the second year, where it is used in a 3-year rotation and is allowed to remain on the land for 2 years. Where a combine is used for harvesting the grain, it would seem wise to use the first crop of lespedeza for seed, in order to prevent raking all the straw in with the hay. In this case, the second crop of lespedeza can be used for hay, which should be free from straw and other obnoxious materials. Usually the stand of lespedeza is not as thick the first year and the thin stand is seriously affected by weeds, while the thick stand tends to produce much more hay per acre. The thickness of the stand will depend upon the rate of seeding per acre for the first year.

Some agronomists and farmers believe that the first crop should be cut for hay and the second crop used for seed. They feel that the organic matter should be left on the field the second year so as to be turned under immediately preceding the next row crop. However, other farmers feel that this organic matter should be left on the land from the first year's lespedeza so that it will be out of the way of the row crop by the end of the second year. Both plans have considerable merit and it would seem wise to let the farmer choose the plan that would suit conditions on his farm.

When lespedeza is grown on very poor soil, it should all be left on the ground for soil improvement. However, the seed can be removed without interfering with the building of the soil to any great extent. As a general rule, however, this lespedeza is needed for hay and the farmer is almost forced to cut one crop.

A third practice which may be used in connection with lespedeza has considerable merit, though it has not been recommended for use in Caswell County. It is possible to gather the lespedeza seed the first year, then disk the ground thoroughly and seed a crop of oats, using a small amount of fertilizer containing a high percentage of phosphorus and potash. This practice is inexpensive and has a number of advantages. In the first place, it disks the lespedeza foliage into the soil where it will do the most good. In the second place, the farmer should get about twice as many oats as would be required to pay the direct costs involved. A third advantage is that the lespedeza is not bothered by weeds and grass, and the tendency is to get a better crop of lespedeza than would otherwise be the case. This practice is being followed in some places and is proving satisfactory, although it would not seem wise on very poor soil, as the yield of oats would probably be insufficient to take care of the cash costs.

Where tobacco is seriously affected by soil-borne diseases, it is recommended that rotations be changed to avoid having tobacco on the same land for 2 successive years. In some cases, a longer rotation may be necessary. This problem should be dealt with as it arises on individual farms.

Where red top grass is used in the tobacco rotation, it has been suggested that this grass be turned rather early in order to give the organic matter time to decay before the tobacco is planted. It would seem wise to break this land in the late fall or winter, depending on weather conditions. By giving the organic matter more time to decay, the quality of the tobacco should be improved. Also, it would make cultivation of the tobacco crop easier.

Sericea lespedeza has been recommended for badly eroded fields, with the understanding that this crop should be used for hay after it has become firmly established on the soil. Sericea is not suggested for the regular rotations, but is used only to conserve soils that are badly eroded and to furnish additional hay.

In each of the major-size groups, Caswell County farmers are underutilizing available land and family labor and, at the same time, permitting their soil to wash away. Tobacco acreage has been reduced, but the intertilled-crop system of farming has continued. The latter has contributed to: An acceleration of soil erosion and soil depletion; dependence upon a single cash crop; and, in turn, low incomes.

Quality affects the returns from a tobacco crop to such an extent that a fine-quality tobacco must be produced to realize the most from existing production opportunities. The importance of this must not be overlooked as other enterprises are added.

To add soil-conserving and soil-building crops to present farm organizations would not immediately contribute much to the family living from the farm or to the cash income. The utilization of this hay, pasture, and small grain as feed for livestock, however, would do both.

CONCLUSIONS

Well-balanced farm organizations, with systematic crop rotations and several sources of living from the farm, as well as for cash income, will provide the basis for farm adjustments. Programs developed in terms of the average farm in Caswell County will not render maximum aid to all groups. This can be readily seen from the difference in the needs of each group of farms and the resources which are available to them. This is particularly evident from comparisons of the kinds of problems found on small farms to those found on the large operating units.

The livestock production rates on these farms are very low; therefore, the efficiency of the livestock enterprises must be increased if they are to net a satisfactory return. The higher quality hay produced from the suggested rotations will contribute towards this end. The use of purebred sires with native breeding stock also will help. Educational efforts and managerial assistance must play a big part in livestock production improvements. Abundance of labor as compared to land on the small farms indicates that intensive livestock enterprises will be more satisfactory as additions to their organizations.

The home-management and farm-woodland phases of these plans are inadequate. The aid of a home economist and a farm forester would have increased the usefulness of the plans a great deal. Their help would have made it possible to integrate the family needs with production opportunities on all of the land in the farms.

Government agencies are all attempting to aid the farmer and to promote the conservation of human and land resources. The interrelationship of the needs for, and the obstacles to, desirable adjustments on the individual farm is apparent. For example, soil conservation, lack of funds, the need for managerial assistance, and the need for an equitable lease are all entangled. Separate agencies attack parts of the problem and such a division of effort is desirable. However, the study of the needs for adjustment and the development of farm plans to improve low

incomes on Caswell County tobacco farms has indicated the desirability of a single farm plan as the basis for farmer cooperation with government agencies.

Perhaps the plans on these farms will provide the basis for "experimental unification" of efforts of government agencies to work with farmers under the widely varying conditions in each group. From these "unified demonstration farms" much may be learned as to the ways in which operators of small, medium, and large farms can make the most of limited adjustment opportunities in Caswell County.

